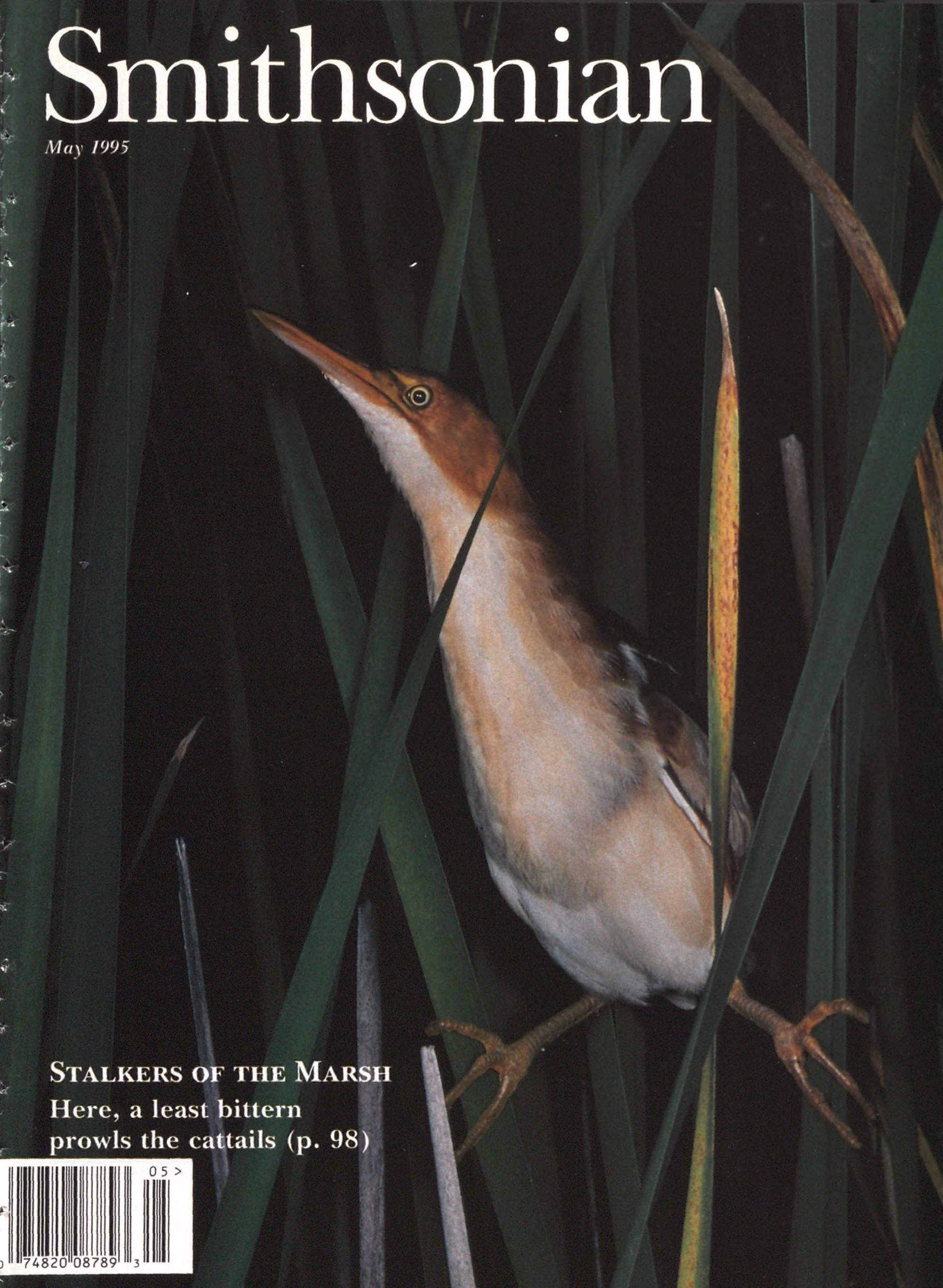
Smithsonian

May 1995



STALKERS OF THE MARSH
Here, a least bittern
prowls the cattails (p. 98)

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May 1995

Smithsonian

Volume 26, Number 2

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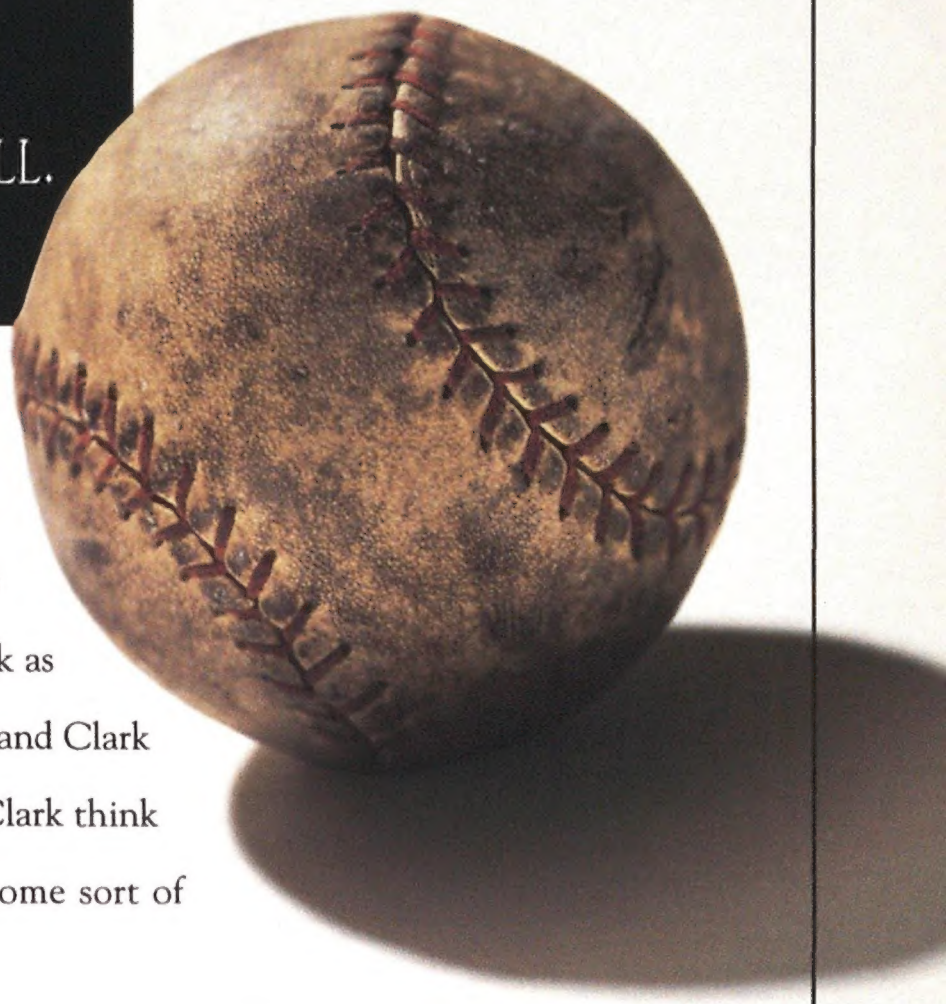

Imagine if you'd never, ever seen a baseball before. What would you think it is?

Students in Marcia Spencer's Geography Class have to describe objects they run across in a nearby park as if they'd never seen them before. As if they were Lewis and Clark exploring the area for the first time. Would Lewis and Clark think a seesaw was a scale for weighing game animals, or some sort of catapult? What would they make of a soft-drink can?

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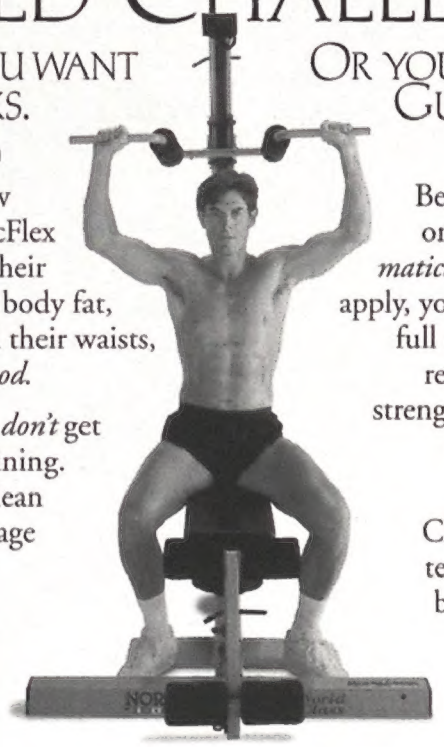

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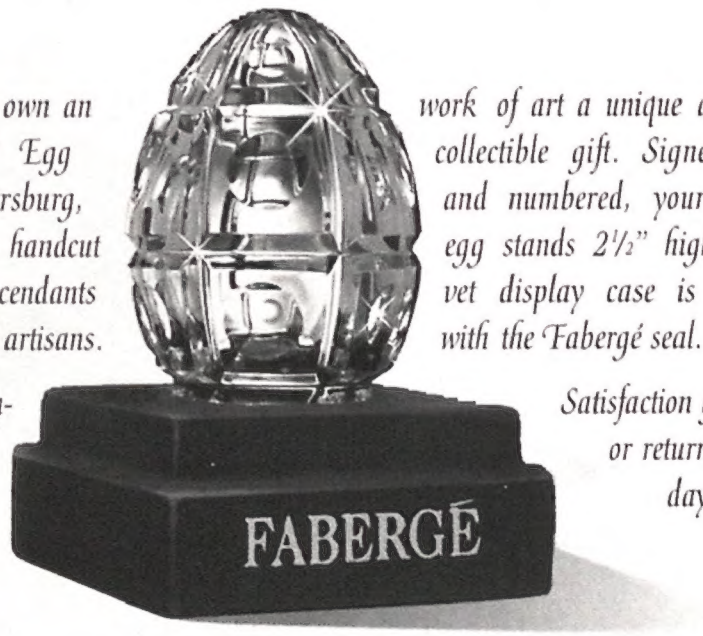

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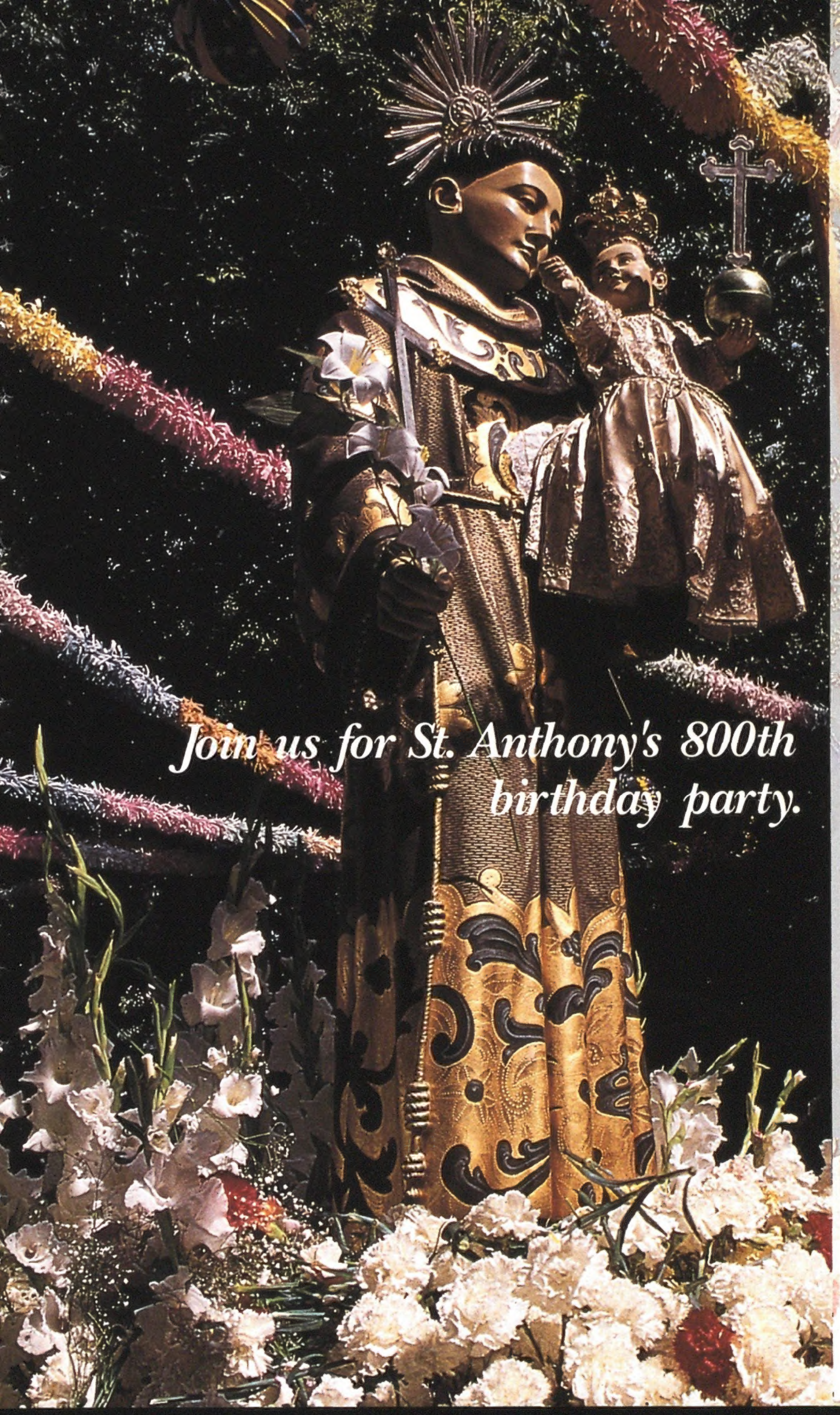

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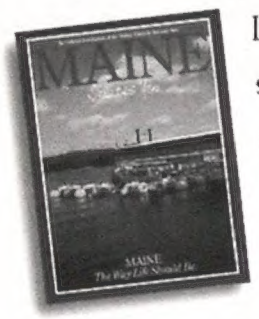

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Secretary Heyman's comments

Smithsonian Perspectives

At the Smithsonian Tropical Research Institute, we are gaining insights for our society in the 21st century

The Smithsonian, as most readers know, is more than a place for exhibitions. A goodly portion of the operating and capital budgets goes to support research within museums and in separate centers. Much of our research, of course, is centered on the Institution's vast collections. The National Museum of Natural History—our largest single unit—cares for a huge number of specimens of flora, fauna and inorganic materials (principally gems, meteorites and other rocks). These collections are maintained by expert managers and provide the basis for exhibitions and research. Similarly, vast collections of art, historical materials, and objects of technological sophistication provide the basis for research that usually is expressed in exhibition catalogs and books.

Besides museums, the Smithsonian has a number of separate research centers. I recently visited one of the most prestigious—the Smithsonian Tropical Research Institute (STRI) in Panama.

The Smithsonian has grown by increments over the past 150 years, largely unguided by any master plans. Our basic charter—"the increase and diffusion of knowledge"—has invited Smithsonian staff with deeply felt missions to experiment with new programs and seek to make them part of the Smithsonian agenda. Thus, growth is a product of ideas, energy and circumstances, much like that provided by the market economy. So it was with STRI, now perhaps the most prominent center for the study of tropical biology in the world.

The saga began when the 4,000-acre Barro Colorado Island was formed in 1913 by the damming of the Chagres River during the construction of the Panama Canal. Ten years later a group of scientists successfully petitioned the governor of the Canal Zone to set the island aside for scientific research. The group included entomologists and biologists involved in surveying plant and animal life for the purpose of controlling insect-borne diseases, such as yellow fever and malaria.

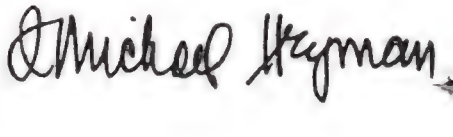
Barro Colorado Island (BCI) became one of the first protected tropical forests in the New World. A laboratory was built on the island the following year and became a place where individual researchers or teachers with their students could have easy and inexpensive access to a protected tropical forest. Smithsonian scientists were among the initial participants, but the organization and facilities were informal, and support came from many sources. As the assemblage and its research products grew, it became evident that further progress required more formal administration, and the Smithsonian was designated as its manager in 1946. The Canal Zone Biological Area, as STRI was then known, was born, regular appropriations followed, and a new program came under the Smithsonian umbrella.

The growth of scientific activity at STRI since 1946 has been considerable. Facilities at BCI have been enlarged periodically in response to tremendous demand. In 1979, for instance, 1,180 biologists and visitors came from 32 countries, and this demand has increased enormously. New laboratory and dormitory units are now being completed to accommodate more visitors and to make use of newer techniques. In addition, since 1946 STRI has established centers in marine biology; a campus in Panama City that facilitates administration, library services, research and conferences; a modest fleet of vessels for transport and research; scientific activities in geology, archaeology and anthropology. It has also created fellowships for promising young scientists. Growth has been phenomenal, supported by grants, fees, private donations, Smithsonian trust funds and federal appropriations. None of this would have been possible without an important and productive research program.

STRI's research, led by a staff of more than 30 scientists, increases our understanding of ecological issues that confront our society. The tropics contain most of the world's species of flora and fauna, providing the diversity that is valuable for economic development, improvements in health sciences and maintenance of gene pools that assure evolutionary flexibility. STRI scientists, augmented by visiting students and faculty, ask such questions as: How did this diversity arise? What genetic, behavioral and ecological factors maintain it? What are the impacts on diversity of past human activities, such as agriculture and industrialization?

One broad field concerns tropical forests. A major STRI activity is the careful observation of a network of similar large plots in Panama and nine other tropical countries in Africa, Asia and South America involving all trees with a diameter of one centimeter or more. The trees are mapped, and data are gathered on growth and development as environments change (e.g., drought and flood, uncharacteristic heat and cold, the presence of old and new parasites). The plots supply critical data that could be used to determine sustainable harvest levels, to evaluate the economic potential of tropical forests, to develop new tree species for plantation forestry, and to accomplish other objectives related to the conservation of biodiversity.

The activities described are only the tip of the iceberg of a rich mixture of basic and applied research at STRI. The basic research informs us about how nature works. From this come unanticipated insights that permit us to solve problems, create products and, perhaps most important, gain the knowledge necessary to help humans prosper without destroying our natural base.



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Letters to the Editor

Dr. Edwin Cohn

Dear Sir: I received any number of plasma and blood transfusions after getting "banged up" in the Leyte landing in the Philippines during World War II. As the transfusions dripped into my arm from a suspended plastic bottle, I vaguely recall thinking how far medicine had advanced since the 1930s when I had been a blood donor.

Several times, back then, I had lain on a table next to the operating table, the patient and I connected by tubes, and had pumped blood from my veins into his during the surgical procedure by opening and closing my hand. Here I am, 85 years of age, enjoying life to the fullest when I should have died 50 years ago had it not been for Dr. Cohn's research into blood plasma fractionation. My thanks to Douglas Starr for his March 1995 article that clarified to whom I owe my gratitude.
Leonard R. Peck
Sparta, New Jersey

Dear Sir: Besides Dr. Edwin Cohn, there was another "King of Blood," an African-American surgeon, Dr. Charles R. Drew. He discovered the life-saving properties of plasma when separated from whole red blood and used in transfusions. Dr. Cohn's research led to fractionating albumin from plasma.

Dr. Drew's research proved that plasma, unlike whole blood, could be stored for relatively long periods of time, which directly led to the beginning of blood-banking and the use of plasma on the WWII battlefields. He took a leave of absence from Howard University in Washington, D.C. to establish and direct the "Blood for Britain" project. In 1941 he was appointed director of the first American Red Cross Blood Bank, and he was in charge of the supply of blood for use by the U.S. Army and Navy.

These discoveries preceded the significant contributions of Dr. Cohn, who further isolated and separated the components of the plasma (fractionation), making storage and shipment even easier. Your article stated that before Pearl Harbor "doctors had tested albumin only in civilian settings." It would have been more informative had the contribution of Dr. Charles R. Drew been woven into the story.
Charlene Drew Jarvis
Washington, D.C.
Mrs. Jarvis is the daughter of the late Dr. Drew, a member of the District of Columbia City Council and a neuropsychologist by training. Ed.

Dear Sir: My brother Fred and I were in the Navy in 1943. We never knew that our sister, Sister M. Jolantha, had supported the war effort by donating blood for the wounded until we saw her pictured on page 128, at the far left [below].
Stan T. Droski
Coral, Michigan

Dear Sir: I recognized the third sister on the left as Sister Mary Elena, who taught me music 60 years ago at Our Lady of Angels Academy in Clinton, Iowa. Thank you for reviving memories of a wonderful woman, a beautiful school and a time that is no more.
Rita Anton
Chicago

Dear Sir: The officer pictured on page 128 who is waiting to donate blood merits specific identification. He is Lt. Comdr. Gene Tunney, former world heavyweight boxing champion, who stunned the world in 1926 by defeating the great Jack Dempsey. In 1927 Gene retained his crown by again whipping Dempsey in that famous "battle of the long count" at Soldier Field in Chicago. Tunney retired undefeated in 1928, the first champion to accomplish that feat.

The Navy awarded Gene a direct commission in 1943, putting him in command of that service's physical culture programs. He was honorably discharged with the rank of commander at the war's conclusion.
Stanley Weston
Publisher, *Ring Magazine*
Rockville Center, New York

Dear Sir: The animal pictured on page 132 is not a mule but an ass, burro or donkey, characterized by long ears, small size, light-colored muzzle and "eye patches," as well as a typifying reluctance to go where led.
Yvette Roberts
Alamosa, Colorado

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Dear Sir: Your opening photograph on page 124 [above] was taken during the early hours of the Normandy Invasion. Capt. Carl F. Tarlowski (wearing a tanker's jacket and a pressure bandage tucked under his helmet for ready access) was a battalion surgeon with the 743d Tank Battalion and one of the first wave to land on Omaha Beach. Despite the heroics of such people as Dr. Tarlowski, field medics and Dr. Cohn, Robert M. Hodgson, the wounded soldier receiving the transfusion, and so many others like him, did not survive that dreary June 6 morning. I met Dr. Tarlowski eight years ago while on a joint successful effort to locate Hodgson's final resting place in Kansas.
Phillip A. Serrin
Niceville, Florida

Dear Sir: The three men who won the 1934 Nobel Prize in Medicine and Physiology were physicians, not chemists. Dr. George R. Minot and Dr. William P. Murphy of Harvard Medical School and Dr. George H. Whipple of the University of Rochester shared the prize for curing pernicious anemia with liver extract in 1926.
Elliott C. Greenfield
New Hyde Park, New York

The Hermitage

Dear Sir: I was amused to read in Stanley Meisler's excellent piece that the Hermitage displays "two Da Vincis." Forty years ago I indignantly protested my professor's marking down my otherwise perfect art history final exam because I, too, had identified the artist by where he was born rather than by his name, Leonardo. Any person of culture, I was admonished, would have known that.

Come to think of it, they got it right when they named the Teenage Mutant Ninja Turtles: Donatello, Rafael, Michaelangelo and Leonardo.
Ann L. Thomas
Potomac, Maryland
Ah, if only we could go back 40 years and correct reader Thomas' professor. Among the accepted styles is the one used by SMITHSONIAN*: "Leonardo" for the artist, "Da Vincis" for the works.* Ed.

Solo sailing

Dear Sir: Wendy Mitman Clark's article and Billy Black's photographs have me yearning again for the open sea.

How is Steve Pettengill faring in the 27,000-mile BOC Challenge? And, by the way, what does "BOC" stand for?
Jim Braun
Lancaster, California
At the time of publication, Pettengill had made it through the third leg of the race and had pulled into second place, behind by only 31 minutes. BOC, the race's sponsor, used to stand for British Oxygen Corporation, but now the multinational gases and health care company is known as the BOC Group. Ed.

Dear Sir: You should have included Captain Joshua Slocum's *Sailing Alone Around the World* as suggested reading. Slocum circumnavigated the world in the late 19th century without the aid of electronics or an alluring wife to meet and assist him at his scheduled ports of call. His only company was a cockroach, to whom he delivered soliloquies and asides. Like Steve Pettengill, however, Joshua Slocum completed his solo journey in a 37-foot yawl.
George Roberts
Jupiter, Florida

Desert flowers

Dear Sir: I enjoyed reading about the desert wildflowers and learning how they survive to reproduce in rainy years. How do the pollinators know when and where to show up?
Lois Goggin
Castro Valley, California
Odor is a common, powerful way for a plant to advertise its bloom. Some plants bloom in concert with the passing of migrating birds, which spot the flowers by color and shape. Ed.

Dear Sir: You described the Gran Desierto as encompassing 1,700 square miles between the Gulf of Mexico and the Arizona border. Using an atlas and a calculator, I found the area would be about 830 miles long and 2 miles wide. When I considered the Gulf of California and the Arizona border, a more normal geographical desert shape emerged.
Dale Lauritzen
La Grande, Oregon

Chimpanzees

Dear Sir: My hat is off to Kim Bard, and I am proud to be in the same gene pool as she. As a substitute teacher, adult literacy volunteer and church youth group leader, I have contact with many humans who exhibit forms of maladjustment similar to Bard's charges. Social clues and society itself may eventually yield some answers. Until then, smile at youth: it does make a world of difference.
Bryan Bywater
West Hartford, Connecticut

Merchant Ivory

Dear Sir: Merchant Ivory's latest film, *Jefferson in Paris*, fosters a false claim. Helen Dudar notes in her article that most of the academic community and several Jefferson authorities have long discounted the Sally Hemings tale. Jefferson's political rivals may have fabricated the story to discredit him during his lifetime. Your promotion of the movie and your retelling of the outright falsehood makes you little better than a glossy *National Enquirer.*
David A. Welker
Centreville, Virginia

Trial by jury

Dear Sir: On page 108 you show spectators with thumbs down, presumably voting "no mercy" for the defeated man. I learned in Latin class that, despite Siskel and Ebert's movie-rating system, "thumbs up" meant death.
Tom Brown
Houston
Other legendary Roman rules of thumb: a thumb pointed at the heart spelled doom, whereas pointed down it signaled "drop your sword." Ed.

Smithsonian Perspectives

Dear Sir: Billie Hamlett's history of the National Zoological Park indicates that

"WILL WE EVER RUN OUT OF TREES?" "Of all the questions kids ask when they visit our tree nursery, that's the one I hear most often. They wonder about the forests and if someday all the trees

will be gone. Well, I'm proud to tell them that at my company, Georgia-Pacific, we're growing 50 million seedlings a year. And then planting those seedlings on millions of acres of land. I think it makes the kids feel good to know that we care. That we're doing our part. And that we're going to make sure there will always be plenty of trees. For them. And for their kids, too." *Jimmy Anderson, Nurseryman*

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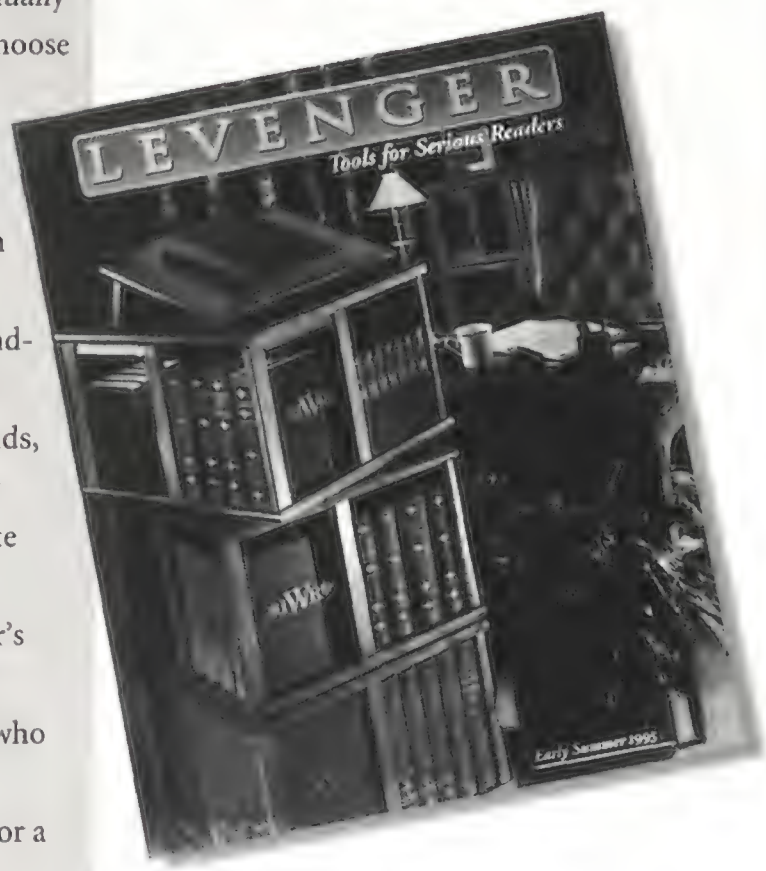

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the live bison living behind the Castle were purchased on May 10, 1888. They were not the bison captured by William T. Hornaday. He brought back those bison, which were not alive, in 1886 and they were used in an exhibition in the U.S. National Museum.

Hornaday's 1886 collecting trip was, however, the event that awakened his awareness of conservation problems.

Pamela M. Henson
Institutional History Division
Office of Smithsonian Archives
Washington, D.C.

Highlights Continued

Dear Sir: Unless the two birds on John Flemming's dyed leather mask are trying to mask their own identity, they are not snowy egrets at all, but great egrets. The former have black beaks, whereas the latter's are yellow or orange.

Bernice R. Sandler
Chevy Chase, Maryland

Last Page

Dear Sir: While registering for a summer high school algebra class, I struck up a conversation with a student who made ROTC sound like so much fun, I signed up. My initial contact with the unit's instructor, Sgt. Alford E. Lee, of Tennessee and the Regular Army, was not pleasant. We met on the rifle range where, instead of hitting the target, my shot severed the wire on which the targets hung. Sergeant Lee informed me in profane terms that I was a disgrace to all that he held sacred. Despite his anger, I continued in the program for three more years, and from his persistent insistence I learned what drive, punctuality and integrity meant.

My thanks to Daniel Pinkwater for prompting fond memories with his essay. And had he known Sergeant Lee, I can assure him he would have fallen asleep only once during a lecture.

Lt. Col. Nicholas W. Moreth, U.S.A.(Ret.)
Ridgewood, New Jersey

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Around the Mall and Beyond

By Michael Kernan

Just exactly how did the largest deep blue diamond in the world find its way to the Smithsonian? An oral history from the late curator Edward P. Henderson tells the story

"I have felt that Nature, when making it," wrote Mrs. McLean of the Hope, "was half-inclined to form a sapphire, but its diamond hardness dispels the thought."

On the 26th of April, 1947, Evalyn Walsh McLean, the mining heiress, died at her Georgetown mansion that overlooked Washington, D.C. She was 60 years old.

Naturally one of the first things her staff thought of was the famous Hope Diamond, the largest deep blue diamond in the world and probably Mrs. McLean's most spectacular possession.

What to do with it?

Someone called Frank Murphy, an Associate Justice of the U.S. Supreme Court: Would he take the responsibility for the thing and the rest of Mrs. McLean's jewelry collection?

Certainly, Murphy said. He knew the McLeans well. Late that night he arrived, collected the jewels, jumped into a taxi . . . and paused.

"Mr. Murphy didn't know where to go, because this was then 11 or 12 o'clock at night. He thought the best thing for him to do was just cruise around the city in a taxicab all night, and this is what he did."

These are the words of the late Edward P. Henderson, a former curator in the National Museum of Natural History's Department of Mineral Sciences, in a delightful oral history interview that I found in the Smithsonian Archives.

The interviews, boxes of them, the recollections of Smithsonian curators, are a treasure. And Pamela M. Henson, a historian with the archives who conducted the interviews, is an indefatigable explorer into the memories of some quietly remarkable people. Henson, who has a doctorate in history and the philosophy of science and a background in biology, had pointed me to Edward Henderson as just one of several dozen colorful Smithsonian curators of the past.

"The next morning," Henderson continued, "why, he went into the Riggs National Bank and he said he wanted to deposit this material. Naturally, the bankers said, 'Are they securities or what. . . ? What is this stuff?'

"'Well, one is the Hope Diamond.'

"Then they said, 'How do [we] know it's the Hope Diamond?'"

The bankers were persuaded that if a Supreme Court Justice had brought it from the McLean mansion, it quite likely was the Hope Diamond. But what was the value?

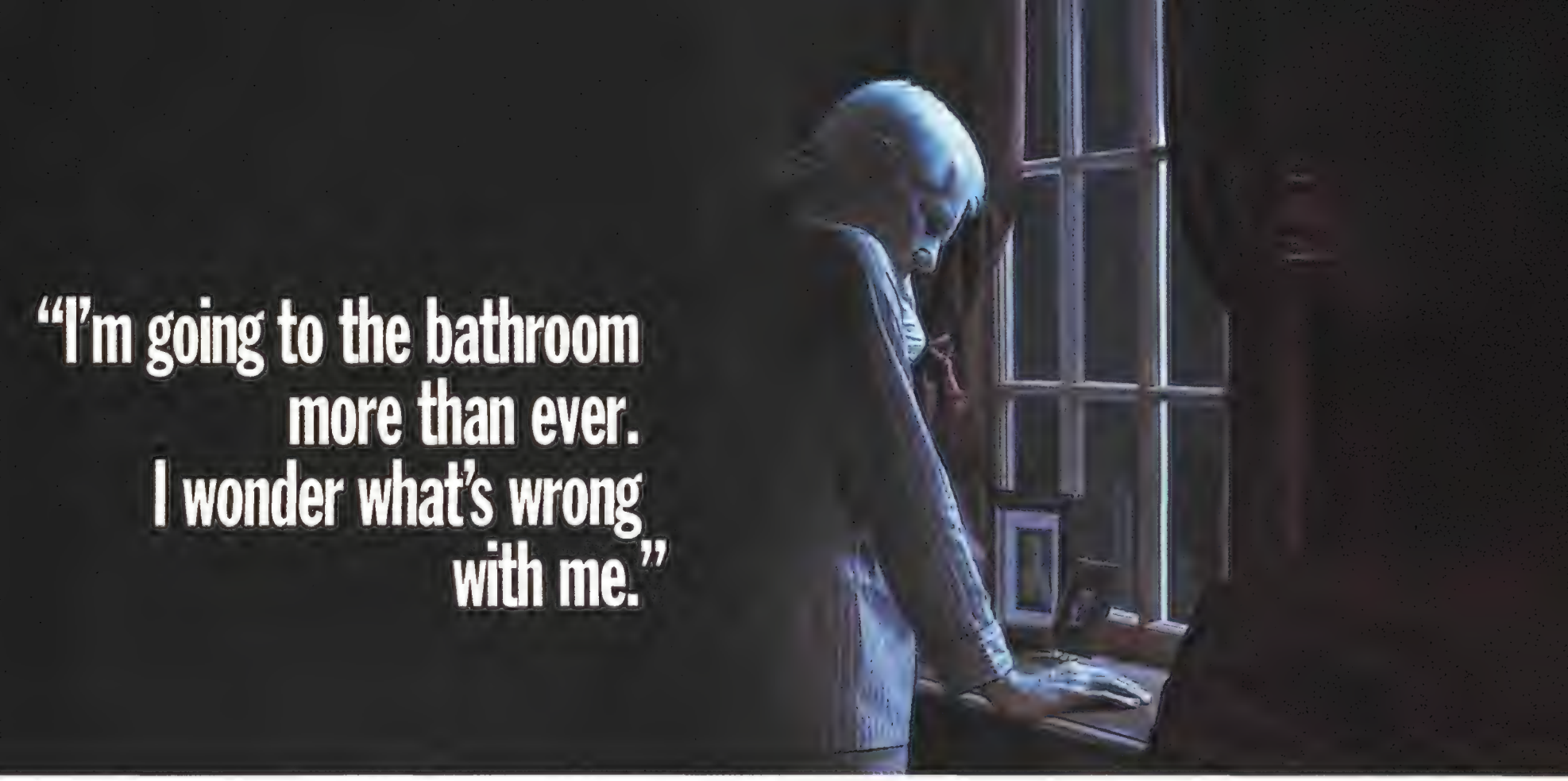
So they called Henderson, the associate curator of mineralogy and petrology. He remembered Mrs. McLean's heroic efforts in 1932 to get the Lindbergh baby back—bear with me here. For the ransom money Mrs. McLean had hocked the 44.52-carat gemstone at a Virginia pawnshop.

In the complex scheme Mrs. McLean hired one Gaston B. Means, a grafter who'd done time in a federal penitentiary. Means, who said he knew who the kidnappers were, apparently pocketed the money. He later went to prison for the scam. Mrs. McLean eventually got the stone back.

Anyway, Henderson thought the value had been set then at about $100,000. That doesn't sound like much for the Hope Diamond, but at the time it was a respectable sum.

The bank deigned to accept the stone, and soon after that Harry Winston, the noted New York jeweler, made a sealed offer for it. He set a three-day deadline on the offer to prevent the entire diamond market from getting in on the deal.

The bank did contact Lazare Kaplan, another major league diamond man, but as Henderson says, "Kaplan decided that he didn't want to get mixed up



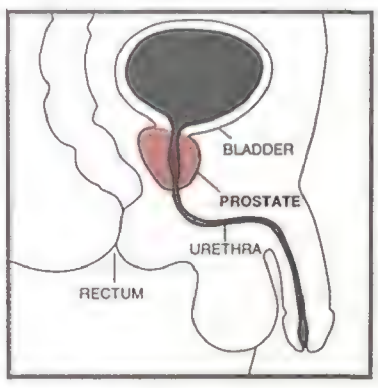
Your urinary symptoms may be caused by a condition called benign prostate enlargement or BPH. BPH is not cancer and does not lead to cancer, although the two conditions can exist at the same time. Remember, only a doctor can evaluate your symptoms and their possible causes.

Is this you?	Yes	No
Do you get up more than once or twice a night to urinate?	☐	☐
Do you often have sudden, uncontrollable urges to urinate?	☐	☐
Do you have a hesitant or slow urine stream?	☐	☐
Do you have a frequent need to urinate?	☐	☐

If you answered yes to even one question, tell your doctor.

Today, symptomatic BPH can be treated by your doctor in several ways. The options are monitoring the condition with regular checkups, surgery, or oral medicines. One oral medicine is PROSCAR, the only prescription medicine for the treatment of symptomatic BPH that can shrink the prostate.

PROSCAR works by blocking a hormone that can cause the prostate to enlarge. *But it is important to know: PROSCAR doesn't work for everyone. Although the prostate may shrink, there may not be an improvement in urinary symptoms. However, in clinical studies with PROSCAR, some men have seen an improvement in their urinary symptoms after 2 weeks. Others have found that PROSCAR took up to several months to help them.* Because all men are different, you and your doctor will need to determine how PROSCAR is working for you.



The prostate surrounds part of the urethra, the tube that carries urine from the bladder. As the prostate enlarges, it can squeeze the urethra and cause urinary problems.

If you have any urinary symptoms, see your family doctor or a urologist soon, and ask about PROSCAR. **For free information to help you discuss your symptoms with your doctor, call 1-800-334-0621.**

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PATIENT INFORMATION ABOUT PROSCAR® (Prahs-car)
Generic name: finasteride (fin-AS-tur-eyed)

PROSCAR is for the treatment of symptomatic benign prostatic hyperplasia and for use by men only.

Your doctor may prescribe PROSCAR if you have a medical condition called benign prostatic hyperplasia or BPH. This occurs only in men.

Please read this information, as well as the leaflet which accompanies your medication, before you start taking PROSCAR. Also, read the leaflet each time you renew your prescription, just in case anything has changed. Remember, this leaflet does not take the place of careful discussions with your doctor. You and your doctor should discuss PROSCAR when you start taking your medication and at regular checkups.

What is BPH?

BPH is an enlargement of the prostate gland. After age 50, most men develop enlarged prostates. The prostate is located below the bladder. As the prostate enlarges, it may slowly restrict the flow of urine. This can lead to symptoms such as:

- a weak or interrupted urinary stream
- a feeling that you cannot empty your bladder completely
- a feeling of delay or hesitation when you start to urinate
- a need to urinate often, especially at night
- a feeling that you must urinate right away.

Treatment options for BPH

There are three main treatment options for BPH:

- **Program of monitoring or "Watchful Waiting".** If a man has an enlarged prostate gland and no symptoms or if his symptoms do not bother him, he and his doctor may decide on a program of monitoring which would include regular checkups, instead of medication or surgery.
- **Medication.** Your doctor may prescribe PROSCAR for BPH. See **"What PROSCAR does"** below.
- **Surgery.** Some patients may need surgery. Your doctor can describe several different surgical procedures for BPH. Which procedure is best depends on your symptoms and medical condition.

What PROSCAR does

PROSCAR lowers levels of a key hormone called DHT (dihydrotestosterone), which is a major cause of prostate growth. Lowering DHT leads to shrinkage of the enlarged prostate gland in most men. This can lead to gradual improvement in urine flow and symptoms over the next several months. However, since each case of BPH is different, you should know that:

- Even though the prostate shrinks, you may NOT see an improvement in urine flow or symptoms.
- You may need to take PROSCAR for six (6) months or more to see whether it helps you.
- Even though you take PROSCAR and it may help you, it is not known whether PROSCAR reduces the need for surgery.

What you need to know while taking PROSCAR

- **You must see your doctor regularly.** While taking PROSCAR, you must have regular checkups. Follow your doctor's advice about when to have these checkups.
- **About side effects.** Like all prescription drugs, PROSCAR may cause side effects. Side effects due to PROSCAR may include impotence (or inability to have an erection) and less desire for sex. Each of these side effects occurred in less than 4% of patients in clinical studies. In some cases side effects went away while the patient continued to take PROSCAR.

Some men taking PROSCAR® (Finasteride) may have a decrease in the amount of semen released during sex. This decrease does not appear to interfere with normal sexual function. Rarely, some men have reported breast swelling and/or tenderness or allergic reactions such as lip swelling and rash.

You should discuss side effects with your doctor before taking PROSCAR and anytime you think you are having a side effect.

- **Checking for prostate cancer.** Your doctor has prescribed PROSCAR for symptomatic BPH and not for cancer—but a man can have BPH and prostate cancer at the same time. Doctors usually recommend that men be checked for prostate cancer once a year when they turn 50 (or 40 if a family member has had prostate cancer). These checks should continue while you take PROSCAR. PROSCAR is not a treatment for prostate cancer.
- **About prostate specific antigen (PSA).** Your doctor may have done a blood test called PSA. PROSCAR can alter PSA values. For more information, talk to your doctor.
- **A warning about PROSCAR and pregnancy.**

  PROSCAR is for use by MEN only.

  PROSCAR is generally well tolerated in men. However, women who are pregnant, or women who could become pregnant, should avoid the active ingredient in PROSCAR.

  If the active ingredient is absorbed by a woman who is pregnant with a male baby, it may cause the male baby to be born with abnormalities of the sex organs. Therefore, any woman who is pregnant or who could become pregnant must not come into direct contact with the active ingredient in PROSCAR.

Two of the ways in which a woman might absorb the active ingredient in PROSCAR are:

Sexual contact. Your semen may contain a small amount of the active ingredient of the drug. If your partner is pregnant, or if you and your partner decide to have a baby, you must stop taking PROSCAR and talk to your doctor. If your partner could become pregnant, proper use of a condom can reduce the risk of exposing her to your semen (discuss this further with your doctor).

Handling broken tablets. Women who are pregnant or who could become pregnant must not handle broken tablets of PROSCAR. PROSCAR tablets are coated to prevent contact with the active ingredient during normal handling. If this coating is broken, the tablets should not be handled by women who are pregnant or who could become pregnant.

If a woman who is pregnant comes into contact with the active ingredient in PROSCAR, a doctor should be consulted.

Remember, these warnings apply only if the woman exposed to PROSCAR is pregnant or could become pregnant.

How to take PROSCAR

Follow your doctor's advice about how to take PROSCAR. You must take it every day. You may take it with or between meals. To avoid forgetting to take PROSCAR, it may be helpful to take it the same time every day.

Do not share PROSCAR with anyone else; it was prescribed only for you.

Keep PROSCAR and all medicines out of the reach of children.

FOR MORE INFORMATION ABOUT 'PROSCAR' AND BPH, TALK WITH YOUR DOCTOR. IN ADDITION, TALK TO YOUR PHARMACIST OR OTHER HEALTH CARE PROVIDER.

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with it. He had plenty to do, so [he] let Winston have it. I could see that these two diamond dealers were friends."

No, Henderson didn't appraise the Hope himself. "At no time do we ever want to get involved with a lot of diamond dealers," he told Henson.

Some years later, Harry Winston gave the stone to the Smithsonian. How did he get it safely to Washington?

It was mailed to the Mall. Henderson recalled that Winston simply posted a package with two or three diamonds in it, and one of them was the Hope Diamond. "Mr. Winston undoubtedly took out other kinds of insurance," Henderson confidently explained.

About the gem collection: when Henderson came to the Smithsonian in 1929 "it wasn't much to be proud of," he said; "a number of different gems were there, but they weren't high quality."

The stones, mostly unmounted, were displayed in flat-topped cases down the center of the hall. "People would lie against them, and gems would rattle off their pads." The burglar alarm beneath the cases was run by batteries that had to be tested every few weeks.

It was a far cry from the new gem hall, the Janet Annenberg Hooker Hall of Geology, Gems and Minerals, which will open at NMNH at the end of next year. The Hope Diamond, which reposes temporarily in a dramatic enough setting on the second-floor mezzanine, will be the centerpiece of a special gallery named for donor Harry Winston. It will feature bronze pillars and cherrywood walls and polished stone floors, and all eyes will be directed to the Hope in its case, beautifully lit and slowly turning on its axis. The chamber will be only one part of what is reported to be the world's most comprehensive Earth sciences complex.

This will not be the first renovation of the hall. It was rebuilt once before, in 1957, and Henderson supervised the modernization job.

Edward Henderson came to the Smithsonian from the U.S. Geological Survey. He was 31 at the time. Those were the days. The museum staff took a pay cut in the Depression, some even were furloughed. Staff were paid in cash, and every two weeks the paymaster brought the money across the Mall in a varnished wooden box—unencumbered by guards.

The Department of Mineral Sciences had a cutting lab in the basement "and

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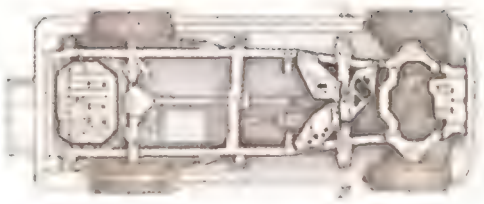

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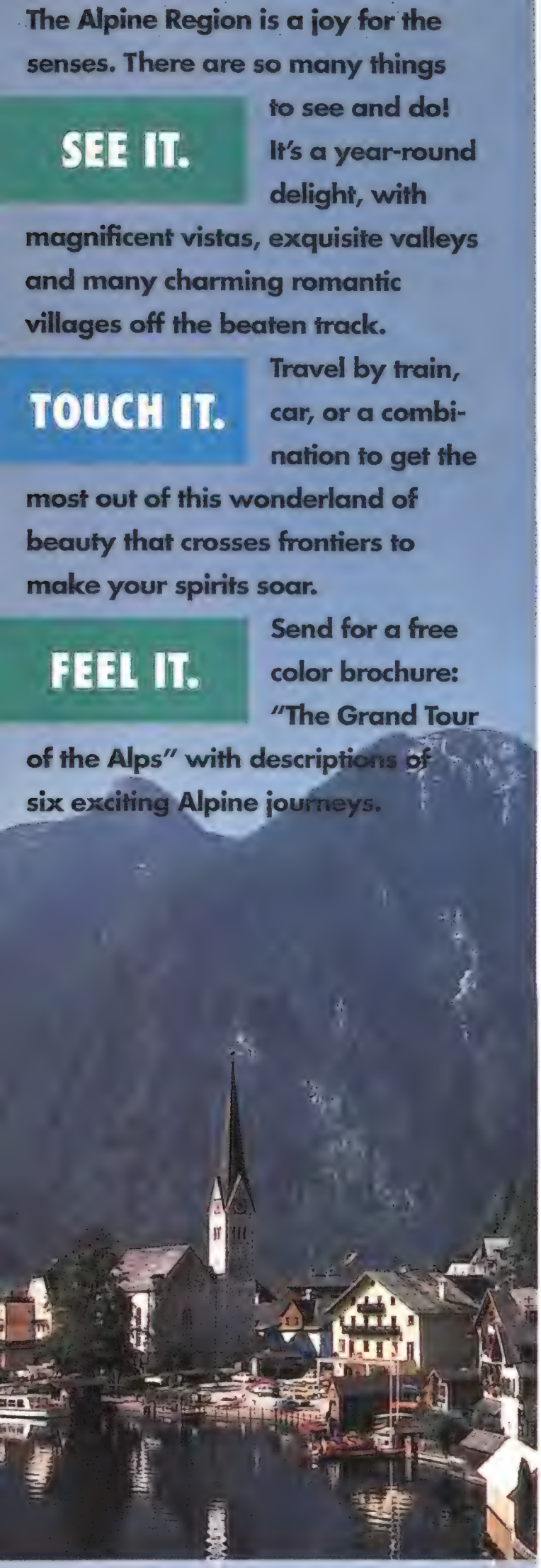

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an old reconverted carpenter's saw." They also had an old-fashioned binocular microscope shared by Archaeology and some of the other divisions. One time in the '40s they wanted to cut a certain meteorite to determine how deeply cosmic rays had penetrated it. The rock was too heavy for their saw, so they took it to the Navy Yard.

"They said yes, they'd cut it for a couple of hundred dollars. . . . It took about three times longer than they guessed," the curator said.

A tough job at that time, cutting meteorites. It had to be done slowly or the meteorite would heat up, which might alter the structure. You were also apt to hit carbide or a small diamond crystal, which quickly dulled the blade and slowed you up.

Henderson knew his meteorites. As a specialist in mineral analysis, he took over the Institution's collection of meteorites and in 1964 became curator of the Division of Meteorites.

Some other people were interested in meteorites too. In the '50s Henderson called the Department of Defense to talk about the shape of the ideal projectile. "We said that we had evidence of things that travel much faster than any projectile ever fired, and for longer distances, and we'd like to talk with them sometime. They sent over—after two or three weeks—a very nice young fellow." Henderson wasn't claiming any credit for the idea, but he noted wryly, "All ballistic missiles now are shaped differently. The rockets that we send into space are shaped like meteorites—cone-shaped, rounded face."

So far I had hardly scratched the surface of the Henderson interviews. He loved to talk about the characters he knew at the Smithsonian: Roland Wilbur Brown in Paleontology, a frugal man who "would come down on Sundays and work in the office. He had a coffee pot [in] which he would boil an egg . . . also a potato: that was his Sunday lunch!" Brown read German, French and Greek, and had a passion for spotting mistakes in encyclopedias and other books.

When Brown's own book came out, on word roots in the English language, it was studded with small errors. "So what do you think this very frugal man did? He wrote to everybody that had purchased his first edition. . . . He said, 'If you'll return your book, I will reward you the cost of your book or give you my second volume, which has corrected all these errors. . . .' It cost him about $30,000."

There was Richard G. Paine, from the Division of Reptiles, who carried around a boa constrictor in a suitcase and once loaned it to the Ringling Brothers Circus because theirs was sick.

In 1947 Gen. Douglas MacArthur invited Henderson to Japan to appraise some $50 million in gems that the U.S. Army had recovered in Tokyo after World War II. Some were found in the ashes of buildings that had burned to the ground. "We got buckets full of sand and gravel with a lot of diamonds in it. So one of our big problems was getting the dirt and smoke and stuff off. . . . We were working in the Bank of Japan, down in their vaults where they keep all their gold. . . . We were boiling the stones in sodium carbonate solution, and vapor was condensing all over their very fine steel safes."

He felt badly about leaving the storeroom in such a mess, but every morning when he and the Japanese team returned to work, "everything was just all spotless again. They'd clean it up; they had to. Each night they cleaned up the whole place."

After retiring in 1965, Henderson worked on as an honorary research associate until 1988. He died September 12, 1992, but his name lives on at the Smithsonian in the form of a fairly large endowment that he and his wife, Rebecca, created to support the collection of meteorites and for research into the Smithsonian's history.

An interesting man. A long life. And I still had two more boxes to go.

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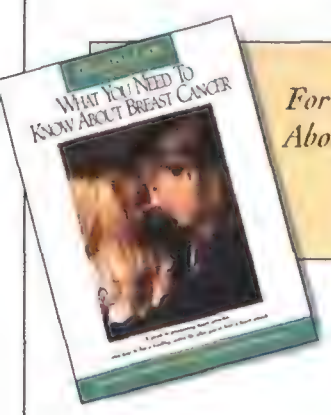

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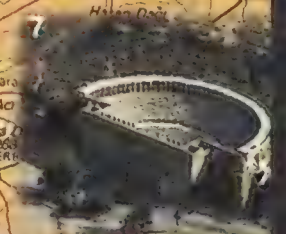

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11. Abraham's Pool, SanliUrfa. 12. Sumela Monastery, Trabzon.

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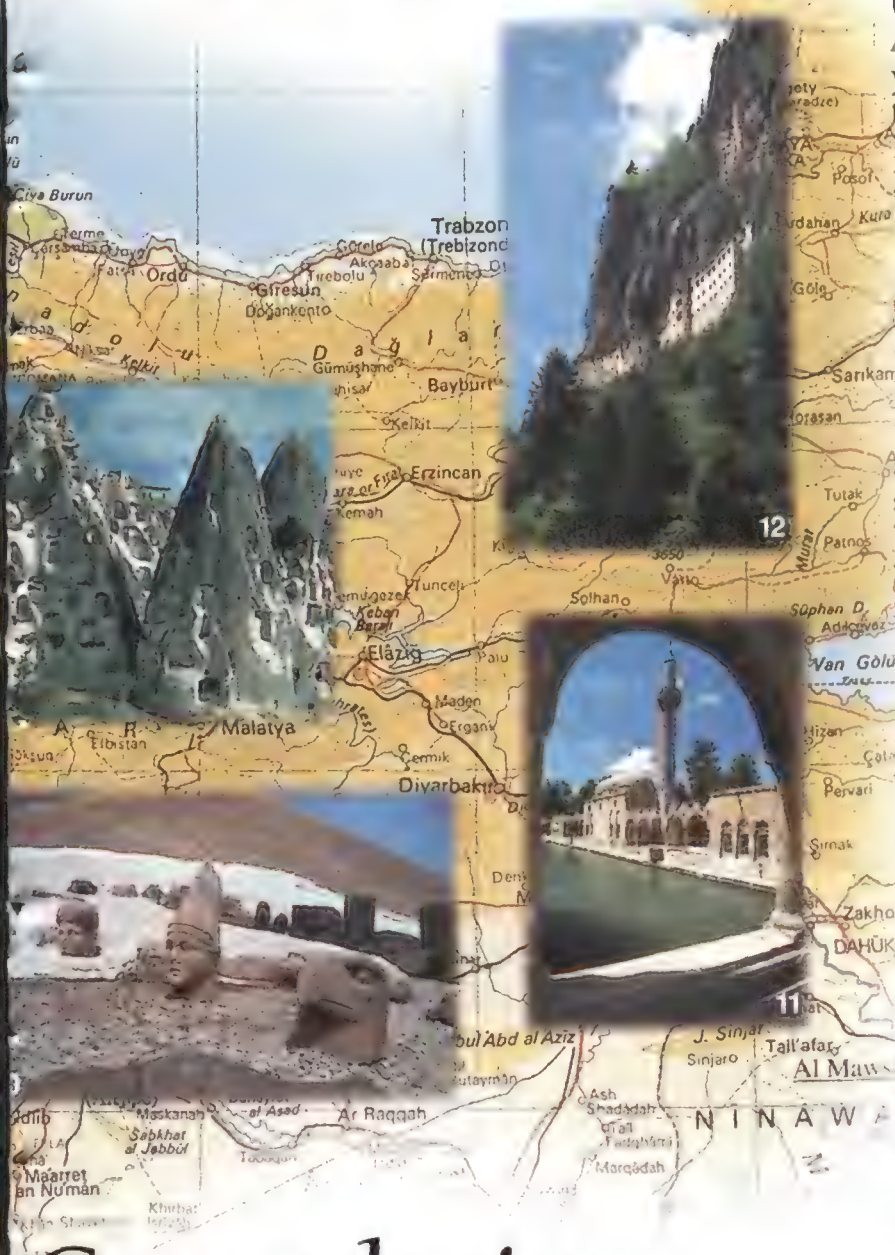

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The Object at Hand

By Paul Dickson

The Soap Box Derby, a peculiarly American institution, thrives on the U.S. teenage passion for anything that has four wheels and goes fast—even if driven by gravity

Museum catalog item 318011.1 was built and raced in the finals at Akron in 1961 by Robert Pusateri. It was donated to the Smithsonian by his father.

The official catalog description for item 318011.1 is simply "Car, soapbox." It is painted blue and carries on its side the name of its sponsor, the *Hartford Times.* Fair enough for a museum catalog. But to the boy who built it—now in his mid-40s—this item was not just a car but a racer and a means of transportation to one of young America's dreams of glory.

This particular racer ran in the 1961 All-American Soap Box Derby in Akron, Ohio. It was conceived early in the summer of 1960 by Robert Pusateri, then 11 years old. Robert had just lost a soapbox qualifier in Connecticut. His brother, Anthony, was about to race another car in Akron, but Robert was already deep into plans for 1961, the new "soapbox year."

By Columbus Day, though the only power tool Robert used was an electric drill, his new car had axle trees and floorboards roughed in. By Easter 1961, Robert and others had spent hundreds and hundreds of hours gluing, clamping and, especially, sanding and polishing the body to cut down drag.

By Derby rules the combined weight of racer and driver is limited. Because gravity is what drives soapbox cars and weight combats air resistance, competitors want to weigh in with their cars as close to the limit as possible. During the painstaking work of building the car and in the preliminary competitions to qualify for Akron, Robert had lost some weight. In order to compensate, he added heavier wood to the construction. "There is a lot of oak in that old car," he says today.

He took the Connecticut Championship and qualified for Akron. But he lost out in the nationals, perhaps because his car might have been crooked in the starting block. Soapboxes are delicately balanced; they race at speeds upwards of 30 miles per hour.

Each year the cars that win the finals stay in Akron and are put on display in the Soap Box Derby Hall of Fame—76 of them to date. Most trips to Akron, however, are round trips. So Robert brought the racer home, and in 1975 his father, Anthony Pusateri sr., donated it to the Smithsonian (currently it is not on display). It had then—and still has—great meaning to the family, particularly Robert. He went on to study engineering and became a manager in the Polaroid Corporation. Like many past Derby contestants, he is convinced the discipline and effort that went into the racer helped him choose—and become a success in—his profession.

Since the Soap Box Derby got its start in the depths of the Great Depression, the story of Robert's racer, and its disappointing round trip to Ohio, has been repeated thousands of times. In 1933 a photographer named Myron Scott was photographing three boys, each sitting in a cratelike frame fixed to baby-buggy wheels, rolling down a bumpy hill in Dayton. Scott invited the boys to come back a week later and bring their friends—for a bigger race. Nineteen racers came. A considerable crowd gathered. One of the contestants was a local 12-year-old named Bob Gravett, who had painted the number 7 on his car—it was the easiest number to draw, he explained. An image of Old No. 7 has been used ever since on the official Soap Box Derby logo.

By late summer of 1933 Scott's races were drawing hundreds of cars and their young drivers, and up to 40,000 spectators. The official Soap Box Derby began the next year in Dayton with 34 winners of local races from all over the Midwest pitted against one another. In 1935 the competition moved to Akron because the publisher of the Akron *Beacon-Journal* promised the Derby's first sponsor, Chevrolet, that it would build a permanent track.

Scott's creation was a peculiarly American institution. Part spin-off from automobile racing and part spin-off from downhill sledding on Flexible Flyers, it thrived on the passion of teenage boys for anything that has four wheels and flies—if only down a hill under the power of gravitational pull. The racers soon moved beyond orange crates and the rickety wooden soapboxes that gave the race its name. The winning racer in 1934, steered by Bob Turner of Muncie, Indiana, was built from laminated wood taken from a saloon bar. By the mid-'60s many cars looked like torpedoes, and some were driven lying down to lessen wind resistance.

Races today are held at Derby Downs, an appropriately Art Deco setting—it was created in 1936 as part of a WPA project. The track has three lanes, each

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ten feet wide, bounded by grandstands that seat 8,000 people. It is 953.9 feet from the current starting line at the top of the hill to the finish line, which is spanned by a magnificent bridge where race officials wait and photo finishes are recorded. The slope starts at 11 percent, easing off to a gentle 1 percent at the end. The speed record is held by Tommy Fisher, who covered the 953.9 feet in 26.30 seconds.

Early winners kept coming back as fathers, then as grandfathers. Crowds grew. The Derby became Akron's greatest annual show. It shut down entirely during World War II but came back strong in the late '50s and '60s. In 1972 Chevrolet—after awarding a total of $1.7 million in scholarships to Derby contestants over the years—withdrew its sponsorship in favor of other events, including America's Junior Miss pageant and the Junior Olympics. These events, it said, were more in keeping with changing American lifestyles.

Then Soap Boxers were hit with scandal. The 1973 winning car had in its nose a secret electromagnet activated by the driver, which helped him get off fast from behind the metal starting gate. The driver was caught because in successive heats, as his magnet battery ran down, the car's speeds got inexplicably slower and slower.

This happened at the time of Watergate, which encouraged editorialists to draw all sorts of demoralizing parallels. "An enduring symbol of boyhood and purity," lamented the *Washington Star*, "became overnight just another embarrassing manifestation of the win-at-any-costs syndrome."

But the Derby soon worked its way back to respectability. It was in the 1970s that girls first began competing. In 1975 Karren Stead became the first girl to win, driving with her left arm in a cast. Past champions have boasted of putting as many as 1,500 hours' work into a single racer. However, recognizing that not all families have unlimited time for constructing a car, the Derby has made some competitions easier by creating three racing categories.

The first is "Stock." The car has to be built from a kit that costs $235 and can be assembled in four hours. The next is "Superstock," with a kit that costs around $275 and takes eight hours to put together. In the "Masters" category, contestants can buy a kit or build their own car from scratch at costs ranging upwards of $500. These can be sit-up or lie-down cars. Most of the youngsters who enter the Masters contest build their own, and three-quarters of these build needlenose cars in which the drivers lie down during the race.

Even so, last year's Masters winner was 13-year-old Danielle Del Ferraro, who did it the old-fashioned way, sitting up in a racer she built from scratch.

In Soap Box circles, Danielle is likely to be remembered for a long, long time. In 1994 she became the first two-time winner in the history of the Derby; she had also won the Kit Car championship the year before. Tiny and slender—5 feet 1 and 96 pounds when she raced last summer—Danielle designed and built her car, the "Double D" (below), with the help of her father, a professional cabinetmaker. It was made of wooden strips glued side by side, then covered with fiberglass that took many hours of highly skilled sanding to make really smooth.

Experts like A. C. (Tony) DeLuca, the Derby's executive director, notes that there are all sorts of tricks to racing soapbox cars. "Wheel alignment is important," he says. "So is knowing how to distribute your weight. You also have to learn the hill you're going to race on."

Some racers believe it helps to scream or hum loudly on the way down to mitigate against vibrations and give a smoother, steadier ride. For years it was commonly believed that black cars ran faster—because they won in the '40s and '50s. Then white cars began to win.

Danielle agrees with DeLuca that steering and knowing the course are what matter most. "It looks easy," she says, "but one bad move at the wheel can lose a race. A lot of kids will end up hitting bumps and wandering off-line."

She drove "sit-up," but the term is misleading. In a race, her father explains, "her helmet and eyes barely peep over the cockpit." To be able to do that, she did daily bending exercises from October to August so she could practically put her head between her knees to cut down on drag. "There are bumps and grooves on the track," Danielle says. "The wheel is hard to hold just right, and drivers who hit a bump and jerk the wheel are in trouble. One bad move can mean the race."

It took her four years to learn to drive well. "At first I held onto the wheel so tight that I got calluses on my hands. What I learned was, you had to hold just hard enough to take a bump and not move from a straight line."

Danielle's final run, which won the Masters Championship, took 28.81 breathless seconds. She crossed the finish line doing 32 mph. What did it feel like? "It's really amazing," she says. "You get tears in your eyes from the speed."

Danielle Del Ferraro, at 13 the only two-time winner in the Derby's 57-year history, cuddles up to her racer, "Double D," at the All-American track in Akron. At right, Danielle in her driving mode as she nears the finish line.

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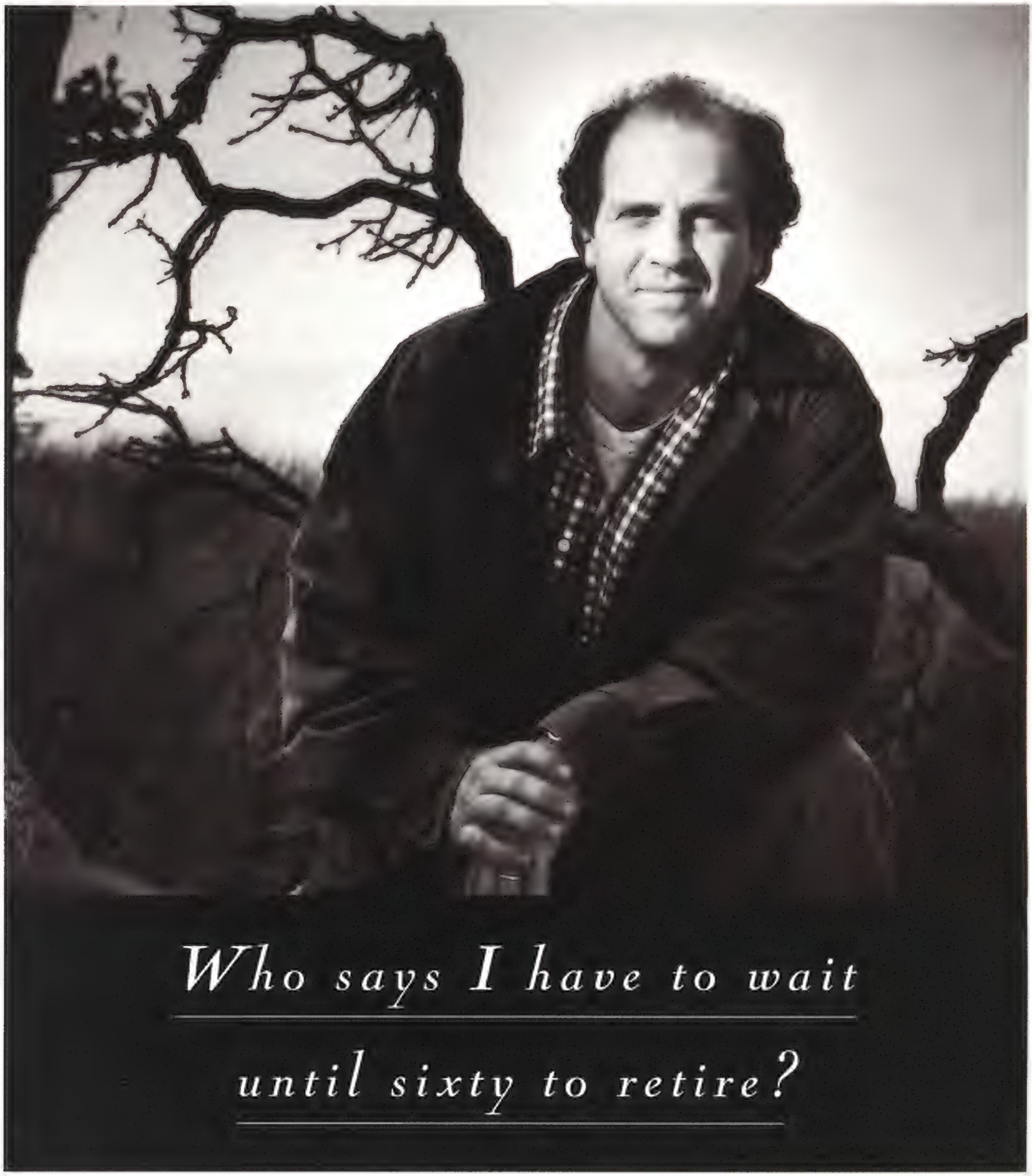

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Postcards picturing popular vacation spots are on view through May 1996 at the National Postal Museum; here, a 1920s look at the nation's capital.

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Museum Hours

Most Smithsonian museums are open 10 A.M.- 5:30 P.M. daily, except December 25. Hours at the National Zoo are 9 A.M.- 4:30 P.M. daily for buildings, and 8 A.M.- 8 P.M. for grounds.

Asian/Pacific American Heritage Month

A variety of activities and programs are planned for May. For 24-hour recorded information, call (202) 357-4574 beginning May 1.

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Special May Exhibits, Events

National Museum of American History

With Pen and Graver: Women Graphic Artists Before 1900 (through January 1996) Photographs, prints, books, cards, plates and other graphics. See *Highlights Continued*, page 36.

Images of Vietnam: March 1970-February 1971 (through July 23) Photographs by Stephen H. Warner, who was sent to Vietnam as a photojournalist for the U.S. Army and was killed in 1971.

Personal Legacy: The Healing of a Nation (runs indefinitely) Exhibit commemorating the tenth anniversary of the Vietnam Veterans Memorial looks at objects and documents left at The Wall. See page 54.

Science in American Life Permanent exhibition tracks advances and discoveries in science over the past 125 years—from aspirin to the atom—and includes a hands-on science center.

American Encounters Permanent exhibit focuses on the American Indian, Hispanic and Anglo-American cultures of New Mexico's Upper Rio Grande Valley.

First Ladies: Political Role and Public Image Permanent exhibition looks at the various roles of our nation's First Ladies. Exhibit incorporates the Smithsonian's historic gown collection including Hillary Clinton's gown.

National Postal Museum

Located next to Union Station on Capitol Hill, the new museum presents exhibitions tracking the history of the nation's mail service.

Are We There Yet? Vacationing in America (May 12, 1995-May 1, 1996) Display of postcards offers a whimsical look at vacationing "American-style." Selected views picture popular vacation spots.

National Air and Space Museum

Building the Arsenal of Democracy: World War II Photographs from the National Air and Space Museum Archives (through October 2) Images depict the supportive war efforts of those on the home front.

Aerial Inspirations: Silk Batiks by Mary Edna Fraser (through June 4) Large-scale silk batiks portray the artist's vision of land, sea and sky.

Beyond the Limits: Flight Enters the Computer Age Major gallery explores the computer revolution in aerospace.

Destiny In Space (10:45 A.M., 1 P.M., 3:15 P.M., 5:25 P.M. daily) New Imax film tells the story of human and robotic space exploration.

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The Secret of Life on Earth (7 P.M. Friday-Sunday) Imax film traces key developments in plants that made possible the web of life.

National Museum of Natural History
Exploring Marine Ecosystems (opens May 19) Newly renovated permanent exhibition in the Sea Life Hall explores two of Earth's ecosystems—a tropical coral reef and a temperate rocky shore.
Ocean Planet (through January 2, 1996) Major exhibition examines the causes and consequences of environmental threats to the world's oceans. Show combines computer animation, dioramas, videos, artifacts, specimens and a resource room.
Gem and Mineral Hall Gallery is closed for renovation until December 1996. The Hope Diamond is on view on the second floor of the Rotunda. See *Around the Mall*, page 18.
Giant Squids Permanent exhibition showcases the world's largest invertebrates.
O. Orkin Insect Zoo Renovated insect zoo features various insect habitats—mangrove, desert, rain forest—and an unusual look at insects in your home.

National Zoological Park
What's New at the Zoo? Some engaging new animals have taken up residence at the Zoo this past year. Look for such additions as a small, brilliant red-orange bird called the Hawaiian iiwi and a pair of nocturnal arboreal acrobats known as African bush babies.
Amazonia Permanent installation re-creates a microcosm of the world's largest rain forest and river habitat.

Freer Gallery of Art
Whistler & Japan (May 14-January 1, 1996) Exhibition of 31 paintings, drawings and prints executed by James McNeill Whistler during the 1860s and '70s. Show complements Whistler retrospective at the National Gallery of Art.
On the River (through January 1, 1996) Hanging scrolls, panels, handscrolls, album leaves and fans, dating from the 13th century to the 19th, illustrate everyday life along a river in China.
Ancient Egyptian Glass (runs indefinitely) Fifteen small, jewel-like vessels made during the second millennium B.C.
Luxury Arts of the Silk Route Empires (runs indefinitely) Galleries showcase objects from the Freer and Sackler collections.

Arthur M. Sackler Gallery
Landscape as Culture: Photographs by Lois Conner (through May 30) Large-format platinum prints by the contemporary American-born photographer record "portraits" of the landscape and architecture of China and South Asia.

Portrait of James McNeill Whistler by Giovanni Boldini is at the National Portrait Gallery through August 13.

A Basketmaker in Rural Japan (through July 23) Woven bamboo backpacks, fishing creels and storage baskets by Japanese basketmaker Hiroshima Kazuo.
Paintings from Shiraz (through August 27) Bound manuscripts and individual paintings illustrate the arts of the Persian book created in Shiraz during the 14th to 16th centuries.
The Arts of China (runs indefinitely) More than 200 objects, including sculptures and paintings, span 6,000 years.

National Museum of African Art
Ancient Nubia: Egypt's Rival in Africa (May 24-September 4) More than 300 objects—ceramic vessels, jewelry, statuary and funerary inscriptions—trace the 3,500-year history of Nubia from c. 3100 B.C. to A.D. 400.
Images of Power and Identity Permanent exhibition features 100 masterworks from the collection.
The Art of the Personal Object Permanent exhibition examines forms and functions of utilitarian objects from Africa.

Hirshhorn Museum & Sculpture Garden
The Collection Reviewed: Thomas Eakins' Portrait of Frank Hamilton Cushing (June 30-December 3) Exhibit examines Eakins' 1895 life-size portrait of Cushing, a Smithsonian ethnologist who had lived with the Zuni Indians.
Directions—Cindy Sherman: Film Stills (through June 25) Series of 69 photographs made in the late 1970s portrays the artist in a variety of female roles and suggests stills from Hitchcock-style B-movies.

Arts and Industries Building
The Harmon and Harriet Kelley Collection of African American Art (through August 1) The National African American Museum Project presents a kaleidoscope of black life and cultural history—19th- and 20th-century prints and paintings.
Discovery Theater
Aesop's Fables (May 2-June 10) Live theater for young audiences presents a Children's Theater Association production of the classic tales. (Recommended for grades PreK-3.) For information, showtimes and reservations, call (202) 357-1500 (voice or TTY).

National Portrait Gallery
Majestic in His Wrath: The Life of Frederick Douglass (through November 19) Exhibit presents the story of Douglass' life and legacy through paintings, prints, photographs and other memorabilia.
In Pursuit of the Butterfly: Portraits of James McNeill Whistler (through August 13) Paintings, sculpture, drawings and photographs trace the evolution of Whistler's self-constructed image as a popular icon in Victorian England.
Recent Acquisitions (through May 29) Artworks on display include caricatures by Alfred Frueh and photographs by Harry Warnecke.
Federal Profiles: Saint-Mémin in America, 1793-1814 (through May 29) Portraits from early Federal America.

National Museum of American Art
The White House Collection of American Crafts (through September 4) Unique contemporary collection was formed in honor of the Year of American Craft—70 works of glass, ceramic, metal, wood, fiber by artists from across the nation.
The Color of Abstraction (through August 20) Exhibition highlights the museum's holdings in the area of Color Field Painting including works by such artists as Gene Davis and Kenneth Noland.
Jim Nutt (through May 21) Retrospective organized by the Milwaukee Art Museum surveys the internationally recognized contemporary painter's work.

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Renwick Gallery
Uncommon Beauty in Common Objects: The Legacy of African-American Craft Art (through June 18) Exhibition features ceramics, fiber, jewelry, furniture, quilts, basketry, leather, glass and metal works by 85 recognized and emerging artists from across the country.

Anacostia Museum
Art Changes Things: The Art and Activism of Georgette Seabrooke Powell (through May 28) The work of the post-Harlem Renaissance artist—paintings, drawings, photographs, personal memorabilia.
Black Mosaic: Community, Race and Ethnicity Among Black Immigrants in Washington, D.C. (through August 31) Oral histories, art, photographs, other materials, reveal cultural diversity.

Heye Center, National Museum of the American Indian (New York)
Creation's Journey: Masterworks of Native American Identity and Belief (runs indefinitely) First of three inaugural exhibitions features 165 objects, dating from 3200 B.C. to the present.
All Roads Are Good: Native Voices on Life and Culture (runs indefinitely) Celebrating the indigenous peoples of the Western Hemisphere, show includes some 300 objects, from Ojibwa bandolier bags to Kwakiutl wood carvings.
This Path We Travel: Celebrations of Contemporary Native American Creativity (through November 30) Unique collaborative presentation features the talents of 15 contemporary Native American artists—sculpture, performance, poetry and music.

Cooper-Hewitt, National Design Museum (New York)
Elaine Lustig Cohen: Modern Graphic Designer (through May 23) The work of one of the few women to successfully maintain a graphic design practice in the 1950s and '60s.
Kitsch to Corbusier: Wallpaper from the 1950s (through August 27) Designs drawn from wall coverings reflect postwar interests. Designers include such artists as Saul Steinberg, Le Corbusier, Henri Matisse.

Exhibition Catalogs

Catalogs available currently include:
Ancient Nubia: Egypt's Rival in Africa ($16.95 paper)
The Harmon and Harriet Kelley Collection of African American Art ($19.95 paper)
Ocean Planet ($39.95/$19.95 paper)
Art Quilts: Playing With a Full Deck ($22.95 cloth)
Uncommon Beauty in Common Objects ($26 paper)
In Pursuit of the Butterfly: Portraits of James McNeill Whistler ($19.95 paper)
Majestic In His Wrath: The Life of Frederick Douglass ($19.95 paper)
Creation's Journey: Native American Identity and Belief ($45/$29.95 paper)
All Roads Are Good: Native Voices on Life and Culture ($55/$29.95 paper)
Saint-Mémin and the Neoclassical Profile Portrait in America ($95 cloth)
To order, send check or money order to Smithsonian Museum Shops, P.O. Box 1140, Newington, Virginia 22122. Include 15 percent of purchase to cover postage, handling (minimum, $4.50).

Eighteenth-century Chinese handscroll (detail) from the Qing dynasty is in "On the River" exhibit at the Freer Gallery of Art through January 1, 1996.

Smithsonian on the Air

Smithsonian Presents Invention Series explores the spirit of innovation behind everyday and extraordinary inventions. Wednesdays at 9 P.M., ET, on the Discovery Channel. Check local listings.

To obtain a free listing of Smithsonian home video titles, write: Office of Telecommunications, Smithsonian Institution, American History Building, MRC 645, Washington, D.C. 20560.

The Smithsonian Associates, U.S. and International Events

The Smithsonian Associates will visit Scranton, Pennsylvania, May 4-7. Highlights include a jazz concert and lectures on forensic anthropology, First Ladies.

Associates in Scranton will receive brochure invitations; Contributing Members will receive complimentary tickets to a selected lecture. For information, contact: U.S. and International Events, 1100 Jefferson Drive, S.W., MRC 702, Washington, D.C. 20560; or call: (202) 357-47800, ext. 274.

The Smithsonian Associates, Resident Program

To become a member, or for fee and ticket information, call (202) 357-3030. May events include:
Planet Ionescopade (May 11-14) Broadway cast presents a pastiche of short Ionesco plays and original songs celebrating the playwright's concern for the Earth.
Dinosaur Babies! (May 21; 1:30 P.M.) Premiere performance by Dinorock Productions—a puppet extravaganza.
Jose Greco (May 30; 7:30 P.M.) An electrifying evening of Spanish dance.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some May exhibits:
• Austin, Texas (May 6-July 2) *Mexico: A Landscape Revisited*, Laguna Gloria Art Museum.
• Portsmouth, Virginia (May 20-July 4) *Full Deck Art Quilts*, Arts Center of the Portsmouth Museums.
• San Diego, California (May 13-June 25) *VanDerZee, Photographer (1886-1983)*, African American Museum of Fine Arts.

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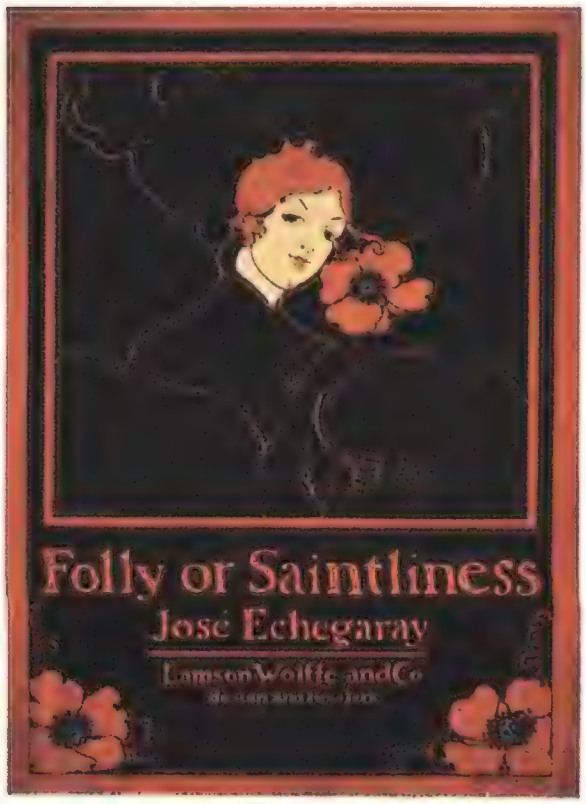
Highlights Continued

The graphic arts' pioneering women

"Miss S. E. Fuller, Designing and Engraving on Wood, No. 634 Broadway. Original Drawings made . . . Machinery, Landscapes, Fruits, Flowers, etc., executed in the best manner upon reasonable terms." This is how Sarah E. Fuller marketed her talents in 1864. One of the thousands of women who sought economic and social freedom in the fast-developing field of fine art and popular illustration in the 19th century, Fuller established her own engraving business. From greeting cards to posters, from book covers to calendars, women produced countless images that graced hearths and homes across the country. A few became famous, but many labored anonymously, producing illustrations that helped define the iconography of the times.

To mark this contribution, an illuminating display of works by some of the leading women artists of the past century has been organized by the Smithsonian's National Museum of American History. "With Pen and Graver: Women Graphic Artists Before 1900" will be on view through January 1996.

"Women's roles changed dramatically over the course of the 19th century," says exhibition curator Helena Wright. "These works show the kind of employment women sought outside the home—20th-century artists owe a debt to the 19th-century designers who opened the field of printmaking to women."
Diane M. Bolz



Poster designed by Ethel Reed in 1895 advertised book by José Echegaray.

L. Prang & Company's *Sumac & Milkweed* print (1885) was by Ellen Thayer Fisher.

Lyrical composition (detail) was created by Rosina Emmet for Prang Christmas card.

Lizbeth B. Humphrey chose Longfellow's *Children's Hour* as theme for Christmas card in Prang poet series.

Boston artist Ethel Reed achieved international acclaim for designs such as the cover for *Arabella & Araminta Stories* (1895).

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Since 1988 a room in a New Mexico salt mine has been ready to store 6,600 barrels of mid-level nuclear waste.

By Jeff Wheelwright

For our nuclear wastes, there's gridlock on the road to the dump

Time exposure caught lights from a cart as staffers zipped past a lone worker and barrel of simulated waste.

It's not an emergency yet, but we have tons of the stuff, some of it hot, some not so hot, and nobody can agree on where to bury it

Radioactive waste is a tar baby, a problem that won't be fixed and won't go away. We have been stuck with radioactive waste for more than 50 years. The stuff is piling up, and Americans don't want it anywhere near their backyards. Politically explosive, scientifically complex, radioactive waste is not amusing at all, but I did enjoy one light moment as I researched the subject.

At the Yucca Mountain Science Center in Las Vegas, the Department of Energy has mounted a clever demonstration. DOE is the agency responsible for disposing of high-level wastes from nuclear reactors and nuclear weapons production. Currently these wastes are stored in tanks, casks or cooling pools. DOE's solution is long-term geological storage. Basically, the agency would bury the dangerously hot fuel rods and processed liquids deep below a mountain in the Nevada desert and leave them there forever.

"We're going 1,400 feet underground"

The proposed site, Yucca Mountain, is located on federal land 90 miles northwest of Las Vegas. Before being taken out to see it, I am briefed on the project at the science center. The guide walks our group past colored charts and cross-sectional models. Then she says, "Now I'll show you a model of an actual experimental emplacement of spent fuel." She pulls open an elevator door. "We're going 1,400 feet underground."

As the elevator rumbles and panel lights blink, a recording explains our journey into "Climax Mine." "Climax" refers to a deposit of granite about 40 miles from Yucca Mountain where atomic bombs were tested. For nearly three years in the early 1980s, government scientists kept watch on 11 spent fuel assemblies that had been placed underground at Climax Mine. To call this waste "spent" is somewhat misleading. When the fission process in reactors loses its efficiency and the uranium fuel is changed, the 12-foot-long rods will emit a terrific amount of heat and radiation.

At Climax, the object was to observe the effect of the heat and radiation on the rock walls of the mine. If the rock of a repository should crack under the heat, there could be pathways created for radioactive materials to leak out eventually, and future generations of Americans might be at risk.

According to Lawrence Ramspott, who managed the test for Lawrence Livermore Laboratory, the granite at Climax did not fracture and the trial was judged a success. The waste was pulled out in 1983 and put back into "temporary" storage. It's still there.

The elevator bumps to a halt. A door at the rear opens, and we enter a 25-foot-long cavern. In the middle of it, a large plug seals a waste-containment shaft. The mock-up of Climax is very convincing; real retaining mesh covers the gray walls. But something is fishy.

Photographs by Michael Melford

Why would DOE go to the trouble and expense of drilling a mine below Las Vegas?

"Unfortunately," says our guide, with no hint of a smile, "this elevator only goes down. To get back up, we must go into the 'surface transport' machine."

Passing through a sliding door, we close ourselves into the dark and wait. Just before the door on the far side is opened, I realize we've been had. We step directly into the science center. Beneath the "elevator," the guide now explains, is an air compressor that provides a jostling sensation. Our true descent has been six inches.

In the days and weeks that follow, as I travel to three potential waste sites around the desert West—one for each class of radioactive waste—I think of the false Climax. It is a good metaphor for our country's nuclear waste disposal program. The lights are blinking, there is a sense of movement, officials make hopeful noises. But we aren't going anywhere.

The nuclear waste gridlock stems in large part from confusion over the types of waste to be disposed of.

High-level waste comprises the spent fuel of civilian and military reactors, plus the liquids produced when the military fuel is processed for atomic weapons. These materials, "hot" in both senses of the word, have long half-lives (the time it takes for half of their radioactivity to dissipate) and so must be guarded indefinitely. The United States hopes to store its high-level waste at Yucca Mountain. The government of Nevada, bitterly opposed to the plan, does not believe the site will ever work.

Low-level waste reflects a broader category. Significantly less hazardous than high-level waste, it includes short-lived radioactive materials, such as medical isotopes from hospitals, and also ancillary refuse from commercial power plants: filters, clothing, contaminated tools and the like. That is to say, some low-level waste contains long-lived elements of high-level waste but in very low concentrations.

Most low-level disposal does not require deep storage. A 1980 law says landfills are sufficient and delegates the job to the states. States have joined together in regional compacts. California, where I live, and three other states plan to bury their waste in Ward Valley, a desert area west of Needles, California. Opponents of the dump raise the threat to the Colorado River 20 miles away. From the sands of Ward Valley to the sprinklers of Los Angeles is a long way, yet if contaminants were ever to reach the river, it could take them there.

Between high- and low-level waste is a third category known as transuranic waste, or TRU. This is the plutonium-contaminated soil, clothing, machine parts and other junk from the U.S. bomb-making program. TRU's hazards are comparable to those of low-level waste, except that all TRU elements have long half-lives. For example, the half-life of plutonium is 24,360 years. Much of the nation's TRU is stored in barrels, awaiting the day when DOE can put it into a salt mine called WIPP

To determine if Nevada's Yucca Mountain is suitable for high-level-waste repository, thousands of feet of rock samples are being analyzed. At left, tracks into tunnel would transport the waste to storage areas.

Atop Yucca, geologist John Peck looks out across faulted and heaved landscape by the mountain. Faults are related to earthquakes; critics charge that shifting land could breach the repository or create leaks.

(Waste Isolation Pilot Plant) near Carlsbad, New Mexico. Most people in Carlsbad support WIPP, but environmental groups and a large faction in Albuquerque and Santa Fe have fought to keep it from opening.

If all radioactive waste emitted the same kind of radiation at the same rate and for the same length of time, there would be less confusion and antagonism over disposal. People tend to mix up the three important characteristics, which are activity, volume and longevity. The single best measure of a waste's hazard is its (radio)activity, not its volume or half-life. Thus low-level waste has a high volume but a low activity and for the most part a short half-life. High-level waste packs high activity and long life into a relatively small volume. And though TRU is mostly low-volume, low-activity, its extremely long life magnifies the threat in another dimension.

At all three disposal sites I visit, scientific doubts have been raised about the containment of the nuclear materials over time. Ostensibly, the investigation of these scientific questions accounts for the political delay. It isn't that clear-cut. Whatever their conclusions, the investigations are bound to dissatisfy. For what is really being asked of the sites is an airtight, watertight, permanent protection of society from radiation. The public seems to view any leakage, any exposure, no matter how slight or distant, as unacceptable. The fear persists even though the waste, if it leaked (we're not talking about a Chernobyl-like explosion), would add but a small fraction to the radioactivity already at large in the environment, most of it natural. At bottom, the nuclear waste "crisis" is a crisis of perception and fear, and no site study can remedy it.

The Yucca Mountain, WIPP and Ward Valley projects are located in the desert Southwest expressly because the desert is dry. Where rainfall is slight, the ground is unsaturated and the water table very deep. A repository in the ground is more likely to isolate nuclear waste if water doesn't get at it. Water corrodes containers, dissolves contaminants and then migrates, transporting the hazard. Waste sites are selected to maximize their aridity. At Yucca Mountain, for example, it rains only six inches a year, and almost every drop is drawn out of the soil by evaporation and thirsty plants. The mountain adds a 1,000-foot barrier to the percolation of water. Therefore, the waste containers buried 600 feet below the base of the mountain should never get wet.

But standing atop Yucca's tawny, north-running spine, I can appreciate how circumstances might deviate from the norm. This is basin-and-range country, geologically unruly. The land is still stretching and fracturing. The west escarpment of Yucca Mountain marks a fault line: on one side of this line the mountain was thrust up, and on the other a block of the desert slipped down. A parallel fault runs along the east side of the mountain, and recently a third fault was found, cutting across it. Faults are related to earthquakes. Nevada generates more

earthquakes than any state besides California and Alaska. The concern is that a quake could cause the repository to be broken into and the waste packages breached. Or new fractures might provide new avenues for water.

Volcanism is another concern. Had I been standing at this spot 12 million years ago, I might have witnessed the terrifying explosion of a giant volcano to the north, from which cascaded thick waves of hot ash. The ash made the tuff of Yucca Mountain. This is not just ancient history. Nestled in the foreground of the mountainous views are five small cinder cones. The Lathrop Wells cone, less than ten miles from the repository, has erupted perhaps as recently as 10,000 years ago, which in geology could be yesterday.

When I visit the site, a wintry wind is blowing across the ridgetop, and rain squalls menace from three points of the horizon. My guide, a geologist named John Peck, is not complaining, but he eagerly endorses the suggestion that we continue our discussion in the truck.

The political shifts that drove the search

Peck has been involved with the search for a high-level waste site since 1977. At that time the medium of choice was a deep salt bed. Many states had them. Peck recounted the political shifts that drove the search from salt to granite to basalt, the promising sites dwindling and the unwilling hosts multiplying, until in 1987 Congress eliminated all but the tuff of Yucca Mountain for study, over the bitter protests of the Nevada delegation.

Since then some $1.5 billion has been spent on mapping, dating, drilling, coring, slicing, heating, humidifying and otherwise analyzing the rock matter of the mountain. As the data have mounted, so too the regulatory demands. Some were thrown up by Nevada, some by the Environmental Protection Agency. Recently some scientists at Los Alamos and elsewhere suggested that storage at Yucca Mountain could result, after thousands of years, in a nuclear explosion, and although other scientists were quick to attack that theory's credibility, no doubt other objections will arise in the future. The upshot is that the opening of a national repository has been pushed back twice, from 1998 to 2003, and now to 2010—and that date almost no one takes seriously. An environmental impact statement, a license application to the Nuclear Regulatory Commission, Congressional and White House reviews, a spate of lawsuits and other red tape loom, all assuming that DOE declares Yucca Mountain to be suitable in the first place.

Suitability now depends on the insides of the mountain. In late 1994 DOE started tunneling at the base, using a special-order, $13 million boring machine. In coming months the tunnel-borer will nose horizontally into the fault zones, exposing fractures and their possible water content. It is a high-stakes probe. Peering over the scientists' shoulders, DOE is looking for "fatal flaws" in the mountain that would disqualify the repository.

A "temporary" mid-level nuclear waste storage facility near Idaho Falls has had barrels piling up since 1975.

"What would constitute a fatal flaw?" I asked John Peck. We were standing in the mouth of the starter tunnel, at that time only 200 feet long. "Some people don't have a doomsday situation," he replied, "but mine is that I'm taking a group of politicians into the mountain. We come upon water dripping from an unexpected fracture. That might just do it."

Some dampness is expected on the walls of the tunnels, and dripping, if found, might be from ancient traps of "perched water" that aren't being replenished. However, the project's critics will make much of any surprises. Each new phenomenon will demand an explanation and a new round of testing. How to explain, for example, a recent finding in a drilling near the mountain, that water has got down 1,400 feet?

"Yucca Mountain is the most complex geology imaginable," asserts Carl Johnson of the Nevada Nuclear Waste

Last year Jeff Wheelwright, former science editor at Life, *published* Degrees of Disaster, *about the* Exxon Valdez *oil spill and Alaska's Prince William Sound.*

They are to be moved to a New Mexico salt mine in 1998, but communities along the way fear accidents.

Project Office, the state oversight group opposing the repository. "A lot of these things were known ten years ago—the volcanism, the faults, the active seismicity. But they weren't considered to be a problem. There was a naiveté on the part of DOE as to what was going to be required for a license."

The toughest hurdle DOE faces is the EPA standard protecting the public from exposures to high-level waste. Current policy not only specifies maximum doses of radiation but also requires a "reasonable expectation" that these limits be met for 10,000 years. Supporters of the repository say that assuring safety for ten millennia is impossible; Congress has asked the EPA to reconsider. DOE calculations can make a persuasive case that a volcano won't erupt beneath the mountain within that period or that radioactive gases won't leak out in doses sufficient to cause cancer, but such math is only speculation. Nevada has its rival calculations.

There are a thousand ways—hypothetically—for the mountain to fail to protect the public, and only one way for the mountain to succeed. For DOE to analyze each scenario of failure is expensive. It is estimated that the site studies and regulatory compliance will cost $6 billion, about twice as much as to actually build the facility.

A sheer wall meets us at the end of the starter tunnel. Peck and I turn away from the terra incognita and look back out into the construction yard. Components of the new boring machine are being put together. The huge device is designed to leak no fluids, no oil or water that might contaminate the rock samples. Workers stand about idly. "If this were a commercial mining operation," Peck concedes, "we'd all be out of a job." Clearly there is no profit to be extracted from Yucca Mountain, only doubts and questions.

All arrows point to WIPP in New Mexico

George Dials is champing at the bit. The manager of DOE's Waste Isolation Pilot Plant near Carlsbad goes to a drawing board in his office and outlines a map of the United States. With X's he marks ten places around the country where TRU waste is being stored. Then he scrawls "WIPP" across southeastern New Mexico. Then he draws rapid arrows from the ten sites toward WIPP.

Dials, who once played football for West Point, appears fit enough to take the thousands of barrels of waste and shove them into the salt mine all by himself. "If the public is at risk from nuclear waste," he says, pointing to the X's, "it's more dangerous leaving it where it is, on the surface. It's not responsible when we have this stable geological repository." He thrusts a finger once more to WIPP at the bottom of the map.

Like a bride waiting at the altar, WIPP has expected its TRU love since 1988. Seven enormous rooms stand ready to receive the plutonium-laced detritus of the Cold War. It is costing taxpayers almost a half-million dollars a day to keep WIPP semioperational.

The repository is located 2,150 feet below a featureless expanse of yucca and mesquite. Several hundred million years ago an inland sea deposited many strata of salt, then dried up and was covered by earth. Unlike Yucca Mountain, the salt bed hasn't been faulted, seismically disrupted or volcanically pierced since it was formed. However, salt under the pressure of depth has a plastic quality. Brine trapped within it acts as a lubricant. The creeping salt is meant to enfold the waste, trapping it forever, but right now the salt is pressing on the empty rooms from all sides, trying to squeeze WIPP shut before it can open.

Joined by Wendell Weart, the project's chief scientist, I ride in a dark, rocking elevator (a real one this time) to the repository level. At the bottom we get into an electric vehicle like a large golf cart and take off down a "drift," a horizontal tunnel. Pink-flecked salt crystals gleam on the corrugated walls.

Tooting the horn as he turns the corners, Weart pulls up to the metal doors of the first air lock. The circulation of air within WIPP is strictly channeled, so that any

radioactive dust would be drawn up through filters rather than dispersed. Weart yanks a cord, a bell rings and the door opens. Inside the air lock he pulls another cord to open the far door. What with the clangs and toots and zooming cart, it is beginning to feel like a ride in an amusement park. More turns through the opalescent maze and we arrive at Panel 1, Room 1.

Thirteen feet high, 33 feet wide and 300 feet long, each of the first seven rooms is designed to hold 6,600 drums of waste. Since 1986 when Room 1 was excavated, it has been strongly reinforced against the creep of the salt. The steel I-beams and rock bolts notwithstanding, I can plainly see the bow of the ceiling.

WIPP suffered a major disappointment in late 1993. For five years DOE had been seeking to conduct tests on a large number of barrels of TRU here in Room 1. The department needed to know whether corrosive gas generated by the barrels might compromise the salt barrier. Critics argued that the tests would be more reliable if conducted in a laboratory. But transporting a transuranic cargo through New Mexico and actually lowering it underground would have been a symbolic victory for WIPP, an affirmation of the repository concept. Opponents saw the camel's nose slipping under the tent.

In the end, scientific logic prevailed over symbolism. DOE agreed to run the necessary tests in the lab. Meanwhile it would shore up the rooms and plan on emplacement of the barrels beginning in 1998.

For DOE, the point of the tests is to show that WIPP is safe. The arbiter of this question is the Environmental Protection Agency. The EPA will be tough. Will the facility prevent cancer-causing radionuclides from reaching the biosphere? Not just for the next year or the next century, but for the next 10,000 years? If breaches should occur, the agency wants "reasonable" assurances that fatal cancers would be minimal—no more than 100 deaths, according to one interpretation.

Not until December 1993, after years of revisions and legal challenges, did the EPA finalize its protection standard. "That's the trouble with these waste-disposal

Geologists Miller, Wilshire and Howard worry low-level waste might reach Colorado River (top right on map).

California hopes to bury barrels of low-level waste in a landfill at this site (left) in the Mojave Desert.

projects," comments Wendell Weart. "They're so long in evolving that regulators are forever passing new laws and applying them retroactively."

The Waste Isolation Pilot Project may yet open. It has almost a decade's head start on Yucca Mountain and is intended for a less-dangerous material. Opponents have many failure scenarios, but the most likely way that WIPP could leak is if, in the distant future, people unknowingly drill a borehole through it in search of oil or gas and hit a pocket of brine below it. A radioactive mix could escape to the water table. The groundwater hereabouts hardly flows, but eventually it could bring plutonium into contact with people. However, DOE's scientists like the odds against this scenario.

"Right now we're in a political lull," says Weart, as we ride back toward the elevator. "But our time will come again. Transportation will attract a much larger opposition than the performance of the repository."

In 1998, whether by rail or highway, the TRU barrels must pass from the states of their temporary storage through the length of New Mexico. Although bypasses will be built and the barrels will be protected in thick casks, communities along the way are afraid of accidents. People envision radiation spewing. On George Dials' map of the United States, the arrows to WIPP are not interdicted anywhere. I would not count on it.

In terms of regulation, the nation's low-level waste is a different kettle of fish, so to speak. This bulkier waste is managed by the states. By now there should have been a dozen low-level-waste facilities set up. Instead there are only two, old dumps at that, serving 19 states, leaving 31 with no place to bring their radioactive trash.

Just one state, California, has issued a license for a new facility. In the early '80s California and its three partner states moved aggressively, selecting U.S. Ecology to be its dump operator. This company had a checkered past in the waste-disposal business, but three other bidders for the job dropped out.

In 1988 U.S. Ecology proposed a site in Ward Valley. Ward Valley is about as far from anywhere as you can get

in the desert, except for the town of Needles (pop. 6,500) and the Colorado River. Needles strongly favored the dump at the time. U.S. Ecology filed an environmental impact report and a license application in 1989.

In the '90s it got complicated. A number of lawsuits were filed. The governor of California promised hearings. The desert tortoise was declared a threatened species. Most important, the U.S. Department of the Interior, which owned Ward Valley, would not transfer the land to state control until pending issues were resolved.

A trio of geologists got angry

Scientists generally stay out of political battles, but three geologists with the U.S. Geological Survey (USGS) also weighed in. The trio knew the region intimately, having tramped and mapped it. When they examined the license application and scientific data supporting it, the geologists were angry. To them the work by U.S. Ecology was full of holes. One of those holes might lead to the contamination of the Colorado River.

At each of the waste sites I've discussed, a different hypothesis of failure has predominated. Yucca Mountain has its disastrously slipped fault; WIPP, its spectacularly unlucky borehole. The worst case for Ward Valley depends on a conspiracy of factors: a higher-than-average rainfall occurs in the future, perhaps because of climate change. The precipitation not only penetrates the waste packages 25 feet down but works its way to the groundwater, 650 feet farther. Contaminated groundwater creeps 40 miles south, maybe emerging at a dry lake bed. From there the groundwater migrates east beneath two divides and into a gradient that feeds the Colorado. The three geologists sketched five other routes in addition.

The California Department of Health Services (DHS) and U.S. Ecology have attacked the scenario at every turn: What climate change? How could there be percolation through the thick unsaturated zone? What justification for a 75-mile transit to the Colorado? And finally, say proponents (quite red in the face at this point), even if it should occur, the thousands of years required would exceed the hazardous life of the contaminants.

Nevertheless, the trio's concerns have been taken up by politicians and recognized by the courts. The more partisan opponents of the dump have made the river the main issue, coloring it with plutonium and warning of 100,000 cancer deaths downstream.

Last July the three geologists—Howard Wilshire, Keith Howard and David Miller—got their day in scientific court. A committee appointed by the National Academy of Sciences gathered in Needles to hear presentations by them and by state and company officials on the other side. The sessions were long and earnest, and hard to follow for those unfamiliar with tritium units, chloride profiles and dipping seismic reflectors. But the principles of the disagreement were soon clear enough.

As Howard Wilshire put it, "The areas most removed from population centers—where society wants to put its waste—are also areas least likely to have good baseline information on hydrology and surface geology." The investigators here had to start nearly from scratch. Since U.S. Ecology's research was not compensated by the state, the company did what was minimally necessary.

The state and the scientists operated by different standards. Take the question of the direction of groundwater flow in Ward Valley. North to south, right? General surveys said so. The number of measurements that DHS required in order to be assured of this was not the same number that Wilshire's group would have required. What if some portion of the water went directly east—toward the river—through undiscovered fractures beneath the mountains? It has happened elsewhere; in fact, it happens in the valley right next door. Make more measurements, the three geologists urged.

"Science is not well served by using its uncertainties to bring the [regulatory] process to a halt," countered Elisabeth Brandt of DHS. "The issues raised by the Wilshire group may be intriguing, but Ward Valley is not a research facility."

Indeed, how much certainty should be required? As it was, the application for the license ran to 7,000 pages.

What's the chance of an asteroid hitting?

"In science you can almost never prove something *won't* happen," said George Thompson, the Stanford geophysicist who headed the 16-member review panel. "The best you can do is give the probabilities. Some things are so unlikely they're ridiculous, like the chance of an asteroid hitting Ward Valley. Other questions, like the design of the berms and trench covers and the likelihood of water getting into the trenches, can be examined productively."

Thompson cautioned that the charge of the National Academy was to evaluate the probability of each of the various failure sequences submitted by the Wilshire group. That done (the report is due soon), the matter would be thrust back to the politicians and the courts.

Wilshire, Howard and Miller were also eager to get off the hot seat. Their scientific qualifications were being slammed in the newspapers. Their own agency, the USGS, had backed away from them. They had become "pawns," one complained to me, of California's Senator Barbara Boxer, a vehement foe of the dump. The trio had not wilted, however.

Outside the meeting, which was held in the Needles Elks Lodge, the temperature peaked at 120 degrees. It was too hot to visit the site except in the early morning. Accordingly, at dawn of the last session, a bus took two-dozen scientists and staffers there.

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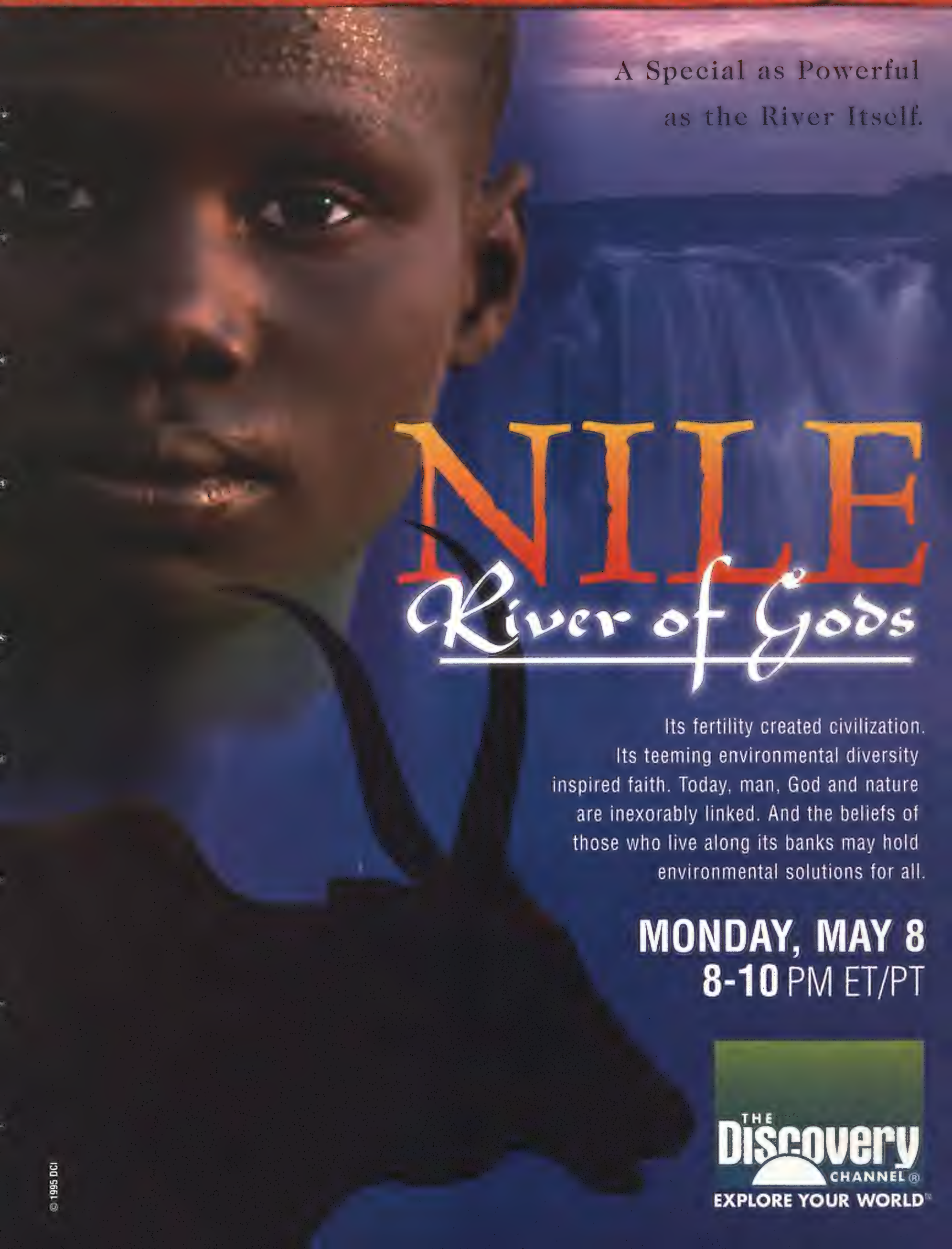

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The gridlock over nuclear waste

Ward Valley is six miles wide at its north end. The dump site is on a gently sloping fan on the west side of the valley. Here the bus debouched the scientists, and behind it came carloads of "stakeholders," which is bureaucratese for people outside the nuclear waste siting process who want to be in. A man from U.S. Ecology described the 70-acre facility. When he finished, he made the mistake of handing his megaphone to a defender of the desert tortoise, who criticized the project and then handed the megaphone to a Fort Mojave Indian, who *really* criticized the project. I marveled at the politeness of the assembled engineers, geologists and hydrologists. They looked attentive but slightly stunned. At last the Wilshire trio ushered them off through the creosote scrub to look at a test trench.

I fell in with two hydrology consultants, pro and con the dump, debating the deep creep of the water table.

Con: There are five wells south of the site and one well one and a half miles north. That's all we have to show that the flow of the whole basin is southerly.

Pro: It's obvious. The water table is 11 feet higher in the north well. That's your gradient. It supplies the pressure to push the water south.

Con: You haven't proved it. You need to put a tracer in the north well and see if it shows up. How do you know an artesian head isn't feeding the north well?

I let them walk on. I would rather hunt for tortoise burrows. Both sides in the Ward Valley dispute have wrapped themselves in the mantle of science. Considering the complex question of how water works in the desert, the opponents focus on the exceptions, the proponents on the rules.

Ward Valley won't extricate itself from the spines of litigation until 1998. That's the year DOE plans to transport the first waste to WIPP and also to make a "technical site suitability decision" on Yucca Mountain. Of course, no schedule regarding nuclear waste disposal has been met so far. Look, rather, for Congress to tackle the problem once again, either trying to solve it by fiat, meaning forced centralized storage sites, or relaxing the deadlines for disposal.

The former is unpalatable. But if dumps are not mandated, won't the radioactive waste "crisis" be made worse? The fears are played upon by both sides. To relieve the threat to the public, proponents would quickly move the waste underground. Opponents would just as soon see the waste back up while repositories are debated, and choke the front end of the process, that is, shut down nuclear power.

What no one is debating is the health hazard itself.

Nuclear waste in its present modes of storage is not very dangerous. The fuel rods are safe in the cooling pools of power plants; as the pools fill up, the rods are being moved to concrete casks. The casks, emitting great heat but little radiation, are held on-site. (Utilities don't like this stopgap, of course, and are suing the federal government for not taking their high-level waste.) Likewise, the barrels of TRU, guarded behind fences at DOE reservations, aren't threatening anyone at the moment. DOE stores high-level liquid wastes there too, some of it in leaky underground tanks. The pollution so far is being contained on the sites.

It is the hospitals and private generators of low-level waste that are the most pressed for space. Waste at one California research facility nearly caught fire after the 1994 earthquake. Urban fires, earthquakes, floods—that's the low-level-waste failure scenario, although the same risks applied when the hospitals' and private companies' storerooms and warehouses were less full. Still, many may give up their licenses if no solution is found.

At all such facilities of interim storage, workers' exposure to radiation is monitored. The limit is 5 rems per year, and in practice the average worker receives about 300 millirems. Leaving aside the meaning of the terms, the question is whether the workers' risk of cancer is acceptably low. Most scientists think so.

The exposure limit for the public living near these facilities is set 50 times lower than the occupational standard. Is the public also being protected against cancer? Most scientists think so. One's risk never disappears entirely. Zero risk, like zero radiation, is unattainable.

It takes a trust in the authorities, admittedly a tall order in suspicious times. If one can trust the current protection standards, backed by inspectors with Geiger counters and doctors with health studies, then the nuclear waste can stay where it is until society comes to a consensus. It's a concern, not an emergency.

As the controversy rages, spent fuel rods from nuclear power plants smolder in cooling pools like this one.

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Offerings at The Wall

Near the base of the Vietnam Veterans Memorial, comrades and loved ones leave their poignant tokens of remembrance

"In the fall of 1982, a U.S. Navy officer walked up to the trench where the concrete for the foundation of The Wall was being poured. He stood over the trench for a moment, then tossed something into it and saluted. A workman asked him what he was doing. He said he was giving his dead brother's Purple Heart to The Wall. That was the first offering."

The story is told in a new book about the Vietnam Veterans Memorial, *Offerings at The Wall*, released this month by Turner Publishing Inc. The photographs in the book record some of the 30,000 objects and letters that have been placed at The Wall, as if at a shrine, by relatives and comrades of the men and women there memorialized.

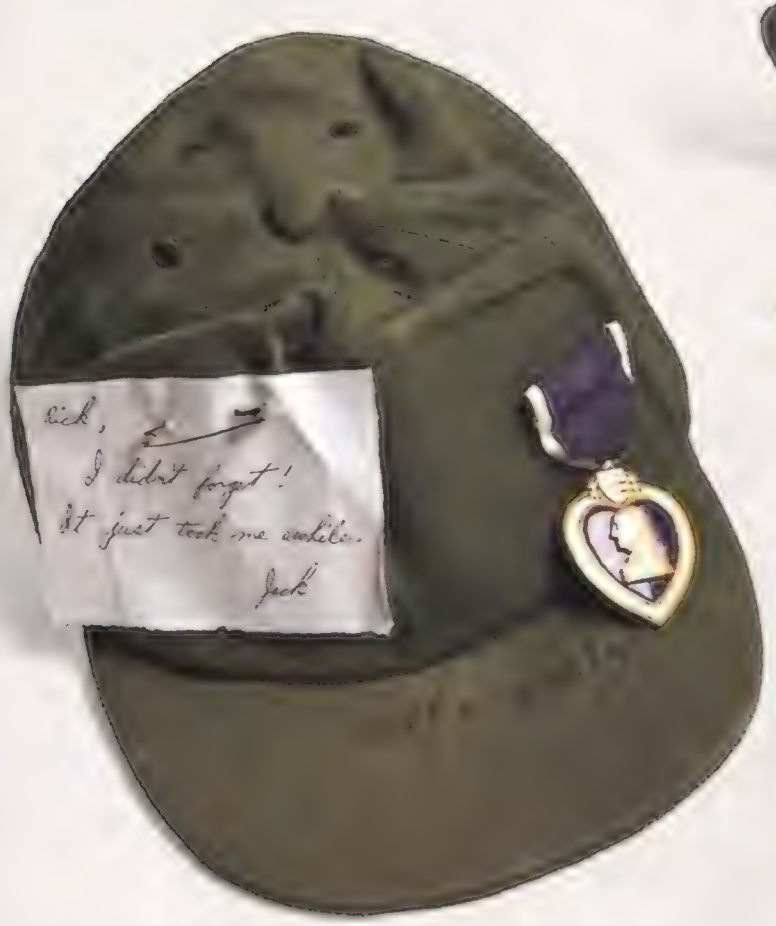
These gifts of remembrance are collected each day by volunteers and preserved by the National Park Service in the Vietnam Veterans Memorial Collection, housed in a climate-controlled repository where the mementos lie near such historic artifacts as the life mask of Abraham Lincoln. (Five hundred of the objects are on view in an exhibition at the Smithsonian's National Museum of American History.)

Some of the offerings were left with poems or letters (letters that were sealed will always remain so), but others bear meanings known only to those who offered them: a Bible, a fishing float, service ribbons, a sock for an amputee's stump, a popsicle stick, four mortarboard tassels, a foil wrapper from a Hershey's Kiss. In his eloquent introduction to the book, Thomas B. Allen writes that The Wall "became a place for wishes, for futures that could not be. Tucked into a wreath are the things of an imagined life: new baby shoes for a baby who never would be, the pencils and crayons for a first day of kindergarten that never would be, champagne glasses to toast a wedding anniversary that never would be, ornaments for a Christmas tree that never would be." Someone left five cards, a royal flush for a poker game that never would be played. And a soldier left a photograph of a North Vietnamese man with a young girl, along with a note: "Dear Sir: For twenty-two years I have carried your picture in my wallet. I was only eighteen years old that day that we faced one another on that trail in Chu Lai, Vietnam. Why you did not take my life I'll never know. You stared at me for so long. . . . Forgive me for taking your life."

And the boots. So intimately shaped by those who wore them, yet so universal—the familiar black leather and tough green fabric, the lugged soles bearing the memory of the earth of the Delta or Con Thien—that they seem a symbol for the whole.

Don Moser

Stitched onto the teddy bear are the name tags of Vietnam veterans of Needles, California, all left at The Wall in memory of Jack McKee, killed in Vietnam on January 30, 1968. The bear was made by Diane Funderburg of Needles. People left beer cans, food, packs of smokes. One soldier swiped some cigarettes from a buddy's locker, intending to replace it with two cans of sardines. The buddy was killed. Twenty years later, the man found his name on The Wall and left the sardines. The braid of hair and the picture of the flag-emblazoned house were left in memory of Lewis Dewayne Ross with a note that said: "Wayne, I think of you every day and miss you so much. I love you."



Perhaps it was a brother who left a birthday note with the ball and mitt: "I've missed throwing a baseball to you . . . . You wouldn't believe my three boys and a little girl who have taken your place and play catch with me." The cowboy boot was wrapped in a bandanna and draped with homemade ribbons like those that celebrate campaigns on regimental standards. The ribbons are embroidered with the name of Warrant Officer John P. Marlow of Pawnee, Oklahoma. Was the Purple Heart perilously won in battle by the man remembered or by the comrade who left it at The Wall, pinned to the fatigue cap? The note reads simply: "Rick, I didn't forget! It just took me awhile."

The wreath, left on Memorial Day 1989, encircled a poem: "To all of you whose names are here,/ Remember this: you're still held dear. . . ." Watches are among the offerings, some perhaps to mark a moment when time ran out. One, stopped at 10:03, was left at The Wall with this note: "When I held you in my arms you felt cold. I would not let them take you from me for as long as I could. And then you were gone." Along with the dog tags there was a letter. It reads: "To all of you here from Echo Company, 1st Marine Regiment, 1st Marine Division . . . I leave you my headband which contains my sweat from the war, my dog tag and a picture of me and Mike. Another time, another place. I'll never forget you."

Built & Painted By A 12 Year
old Boy, Who Died A 21 Year
old Man March 23rd 1968
IAN J. FRANKS
Love, Mom Dad Ron Andy
& Our Families You Never Met

It was mostly the young who died in Vietnam, and so it is not surprising that among gifts to The Wall are mementos of childhoods not long past. The inscription on the ceramic dog reads: "Built and painted by a 12 year old boy, who died a 21 year old man March 23rd 1968." American flags are frequent offerings. The Park Service gives most of them to such organizations as the Boy Scouts and the Girl Scouts, but any that have inscriptions are retained in the collection. One of those shown below carries the message: "May all of you who died, all of you still missing and all of you who returned home never be forgotten." The flag, dedicated to Charles L. Hoskins, is signed: "Connie."

By Richard and Joyce Wolkomir

Deep in the north country, they dance their hearts out

From a Vermont hamlet, the Wolcott Children's Ballet is, against all odds, bringing the magic of inspired performance into the backwoods

In an out-of-plumb town hall in Wolcott, in northern Vermont's lumbering country, a child is dancing. It is 9 at night. Under bare light bulbs hung from a tin ceiling, the 10-year-old pirouettes to Vivaldi's *Four Seasons.*

"*Relevé lent!*"

Kennet Oberly, director of the 50-dancer Wolcott Children's Ballet, watches with penetrating black eyes as the girl rises on the balls of her feet, practicing a solo sequence. When the troupe takes *The Four Seasons* on the back roads in a few weeks, 3,000 schoolchildren and hundreds of adults in Vermont's hardscrabble "Northeast Kingdom" will see classical ballet. Far from the spotlights, the cheering fans, the megastars and the glittering performances of the nation's premier companies—the American Ballet Theater, say, or the Joffrey—a troupe of children practices in obscurity, striving for perfection. Oberly wants every foot to arch exactly. Every finger must curl just so. "*Arabesque,*" he says. The child elevates one leg behind her, toes pointed.

Oberly, bald on top, a mane of black hair spreading over his collar, demonstrates the steps, lithe as an otter. "Good, Jamie," he says. "Now, *posé en arrière.*" A log truck rumbles by, shaking the building. The child falters. A gust spatters the windows with April sleet. Oberly stops the battered tape recorder. Turning toward two visitors, he pivots from the diaphragm, as if he were still onstage in Stuttgart, Tallinn, Helsinki, Stockholm, Copenhagen, Paris, Milan, Boston, Los Angeles, San Francisco or New York. "We're getting there," he says. "Almost."

Director and ballerina stoop to the day's final task.

They pull up strips of gray duct tape for sticking mats to the floors, which decades of work boots and galoshes have worn too slick for ballet slippers. The child pulls a parka over her pink leotard. Outside, wisps of mist rise from the still-frozen ground. "Repetition is the mother of learning," Oberly says, and switches off the lights.

Weeks later, on a Sunday morning in May, a local agitator for good causes, Nola Denslow, is explaining how a classical ballet troupe sprang up here. She is talking over

Demonstrating the perfect plié from her front porch, Jamie McCollough, age 9, offers a study in grace. One of the stars of her troupe, the fourth-grader (who is also a straight-A student) aspires to a ballet career.

pancakes and maple syrup in the Village Restaurant in Hardwick, five miles east of Wolcott. Many of the diners are wearing billed caps inscribed "Caterpillar" or "John Deere." Parked outside are pickups with rifles racked across the rear windows.

It began when Nola Denslow knocked—presumptuously—on a stranger's door. She had moved to Vermont with her seven children "hoping to re-create the romance of rural Mexico," where she had once lived. But she found "any chance to be involved in the arts was limited." So in 1980 she dragooned volunteers, raised funds and got Wolcott to transform its boarded-up railroad station into an arts center, offering courses in everything from music to pottery making.

But no dance. Then Denslow heard that a retired ballerina and her husband lived on a Wolcott farm. June Gorton had been an early member of the Balanchine Company and had assisted Jerome Robbins in choreo-

Photographs by Richard Howard

At troupe's Wolcott Town Hall studio, teacher-ballerina Larissa Sintsova rehearses 9-year-old Yve Tempesta.

graphing *The King And I.* Denslow quickly was knocking at the Gortons' door, which was opened by a gray-haired woman with a dancer's regal posture.

Teaching dance would be a tremendous service, Denslow said. "Absolutely not!" June Gorton said. "I don't dance anymore." "I'm really sorry," Denslow said, merciless in a good cause. "A lot of kids in this town should have this opportunity." The next day, Denslow's telephone rang. "I'll do it," June Gorton said.

She taught virtually for free. Her husband, Robert, built sets. But eventually the arts center's federal funding evaporated. Wolcott had to decide: road salt or watercolors? The vote was 50 to 49 for road salt. "When people realized it was lost, a gasp went through the town meeting," says Denslow. The Gortons announced they would fund the Wolcott Children's Ballet themselves. Classes moved to the Wolcott Town Hall.

For many youngsters, the ballet had become indispensable. Girls who had never heard classical music in their lives discovered that, onstage, they could excel. "Once, they were rehearsing with the Vermont Symphony Orchestra, which had a formidable conductor at the time," recalls Denslow. One little dancer, normally a mouse, turned to the baton-waving maestro on the podium and commanded: "Increase the tempo, please!"

In 1991 a cerebral hemorrhage partially paralyzed June Gorton. From her wheelchair she continued to take an active interest in the ballet, but she could no longer teach. Finding another director with June's qualifications, who could work for almost nothing, would be impossible. But the children were addicted. And so Wolcott took a deep breath and decided to raise money to hire a director. A Utah dancer agreed to come, despite the tiny salary. The "studio" awaiting her had wavy floors; sets and costumes were all homemade. She stayed only a year. And then—by a fluke—Kennet Oberly and his wife, Larissa Sintsova, a principal dancer with the Estonian National Ballet, arrived from Tallinn.

Oberly's father, a physicist, developed the lens coating on the camera Neil Armstrong used on the moon. His mother, a theater director, was a founding member of Washington, D.C.'s Arena Stage Theater.

"When I was 5, in 1962, a touring group of *West Side Story* came to Boston, where we lived, and it electrified me—the energy, the music," Oberly remembers. "But what really got me was the guys jumping around in sneakers, knife fighting, smoking and climbing chain link fences—I thought it would be neat to get up there and smoke and climb chain link fences." "Wait until you're 8," his mother told him. When the family moved to Pittsburgh, Kennet told his mother: "Now I'm 8." He became the only boy in a ballet class of 30 girls. "This was not what I'd intended," he says.

Still, by age 12 he was so promising that he became a student at the Harkness Ballet in Manhattan. By age 14 he had joined Germany's Stuttgart Ballet. Oberly danced next with the Boston Ballet, the Houston Ballet, the European troupe of Maurice Béjart, returning to the Boston Repertory Ballet in 1978. Then, for eight years he worked in Des Moines with Ballet Iowa, rising from dancer to artistic director.

He was ballet master of the Finnish National Ballet when the Estonia Theater invited him to revive works by the 19th-century Danish choreographer August Bournonville. While working with the Estonian ballet, Oberly married ballerina Larissa Sintsova. He had taught at a ballet camp in Vermont, and they decided to take over a dance school in Burlington. But the deal fell through. When they heard that the Wolcott Children's Ballet needed a director, "I took the plunge," says Oberly.

His salary is about $20,000. But raising even that much is formidable for the Children's Ballet. "We're having a cash crisis right now," Oberly says, shrugging, as he pets Masha the cat, in his still mostly unfurnished house on one of Hardwick's steep back streets. Sintsova teaches at the Children's Ballet for free. "You can't look at it as a business, and that's one reason I like being here," says Oberly. "We're not trying to become the next Ballet of New England—we are two professionals who settled here for our own personal reasons, and we're trying to bring dance to the Northeast Kingdom."

As Vermont residents for more than 20 years, writers Richard and Joyce Wolkomir found a story in their own backyard when they discovered the Wolcott Ballet.

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At 3 the next afternoon, he is back at the Wolcott Town Hall, unrolling the floor mats. Bronwyn Potter, pianist for the troupe, lays her pocketbook on the hall's worn upright piano. Oberly begins taping down the mats.

Six days a week he teaches the school's 48 students. He also choreographs and conducts rehearsals for the spring production. Last year the dancers performed *The Four Seasons* in remote town halls throughout the Northeast Kingdom and in northern New Hampshire.

Tickets cost only about $5. In the isolated hill towns—Island Pond, Hardwick, Orleans—weathered men come in work boots, and women wear their best dresses. Sometimes, as the music wells and the costumed dancers spin and leap, children in the audience run into the aisles to perform impromptu solos. Every year, some join the Wolcott Children's Ballet themselves.

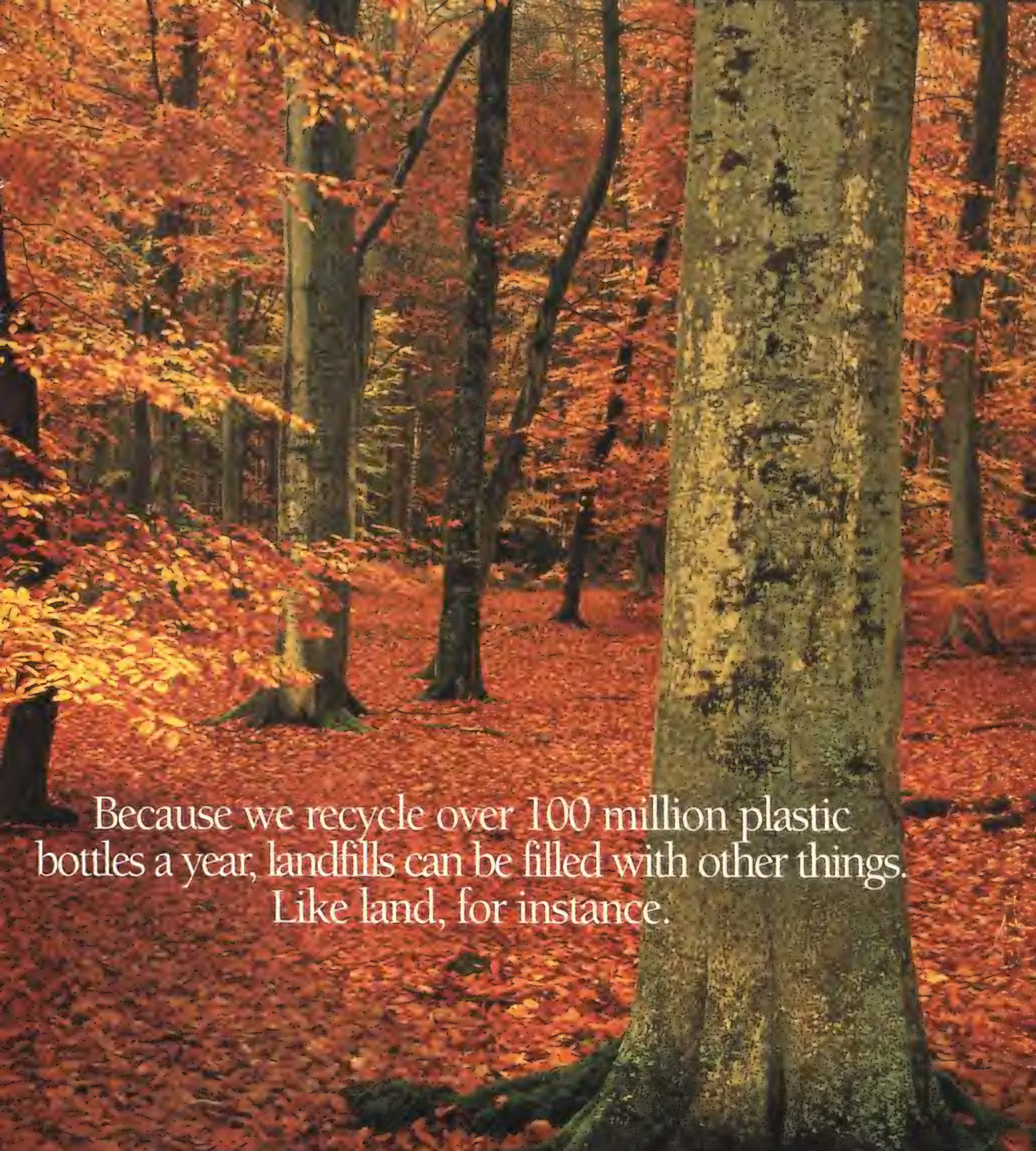
At 3:30 P.M. a class of such beginners arrives, four ponytails, one pageboy. They line up in front of Oberly, belt-high recruits gazing up at their giant drill sergeant. Oberly demonstrates the movements he wants them to practice. First position: heels together, toes totally turned out. Second position: "Move your heels a foot apart." Third position . . . "Elbow in front of your ribs," Oberly says, eyeing his ragged line of 8-year-olds. While the girls slowly execute two demi-pliés, he straightens torsos and adjusts elbows. He dances with one girl so she can mirror his movements.

As the lush practice music fills the hall, the little girls frown in concentration. If they learn to make their pliés and jetés precisely and gracefully, they will join the troupe and go on the tour. "It's not so important, ladies, to lift your leg high, because you get distortion," Oberly says. "It's like chocolate—do you want quantity or quality? We want Belgian dark chocolate. And just a little of it." "No!"—rebellion in the ranks. "Hershey bars!" "A lot!" Oberly pretends to look crestfallen. An older group is now arriving, their knapsacks full of schoolbooks and leotards and slippers.

Among the newcomers is Jamie McCollough, one of the students Oberly considers talented enough for a ballet career. That is her ardent plan. "Finances are the hard part," Jamie's father, Mark, a carpenter, had explained earlier that day at the McCollough's old house in Wolcott, which he is slowly shoring up and renovat-

Director Kennet Oberly, conducting exercises at the barre, puts class of young dancers through their paces.

A makeshift studio poses challenges: to compensate for a worn floor, Oberly lays down mats with duct tape.



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ing. Jamie's mother, Mollie, a waitress, said: "Sometimes on her way to bed she actually apologizes for her passion for ballet, even though she's in fourth grade and gets straight A's! And in the morning she comes down and dances to the refrigerator!"

While the adults talked in the kitchen, Jamie and her friend Cody Leary, who also plans a dance career, practiced steps in the living room, in full stage regalia. The McColloughs worry about funding Jamie's training as a dancer once she is too old for the Wolcott Children's Ballet. They worry about the troupe itself. "I'm surprised about the audiences because it's just about always full houses," said Mark. "But now we have to raise money." The fundraising crisis, Mollie says, is never-ending.

"It's hard," she observes, "to ask the same little businesses month after month for money. Everything's difficult." Mollie points to the kitchen's cinder-block chimney, festooned with pairs of defunct dancing slippers. "Slippers—once a month! And the stockings!" But they are enthusiasts. As Mollie puts it: "Can you believe it? Ballet—here!"

At the hillside home of 13-year-old Eliza Martin, another of the dancers, the troupe's finances are also a worry. Eliza's father, Tom, a cabinetmaker, builds props when the troupe needs them. Her mother, Linda, Wolcott's town clerk, also serves on the ballet's board of directors. She believes the ballet has become part of everyday life here. "I think it gives the kids more than dance because it requires them to commit themselves to something, and performing gives them self-esteem. It's so important for adolescents to have a chance to do something besides watch TV or hang around on the streets—that's why I wanted to be a board member."

During the troupe's production of *The Four Seasons*, the centerpiece of last year's tour through northern Vermont, dancers perform for town of Enosburg Falls.

"Every move you make must be special"

At the Wolcott Town Hall, Eliza Martin, Jamie McCollough, Cody Leary and the rest of their group have taken the floor. Oberly is eyeing their feet.

"What happens when you stand on your heels?" he asks. "You fall down. The moral is, stand on the balls of your feet. Even when you play basketball. Or prizefight. Do you know who Muhammed Ali is? How could he dance like a butterfly if he didn't stand on the balls of his feet?" Oberly presents a balletic interpretation of Muhammed Ali, dancing like a butterfly. "Each step you take is like stepping on stones along a lake, and do you know why?" Oberly asks. "Because every move you make for an audience must be special."

Now the most advanced students are arriving, girls of 13 and 14. While they warm up at the barre, the younger group disperses next door to the Wolcott Store and Gas Station for a supper break. In their gauzy skirts and tights, holding grinders and Fudgesicles and bottles of juice, they line up at the counter behind two burly men

In the sequence above, summer passes into autumn; below, at left, dancers enact a prelude to spring; below, Juliette Hancock in a midsummer interlude.

in flannel shirts smeared with chain-saw oil, buying cigarettes and six-packs. Then they hurry back to the town hall to await their turn to rehearse for the spring tour.

They practice late into the evening. "One of our problems here is that these children never see ballet," Oberly announces. "They have only me and Larissa and each other, so we're all going to Boston." That weekend, most of the troupe goes to the big city to see the Boston Ballet perform *Eugene Onegin*. They return starry-eyed. Jamie McCollough and Cody Leary declare they are even more determined to make their careers in ballet. First, however, they must master *The Four Seasons*. "It's a meditation on the seasons," Oberly explains to one class. "Life is seasons, too, and we have our own inner seasons."

Step by step, bringing a dance to life

But this is a dance with no story. He must find ways to help the dancers bring it to life. "Really slow, Kaili," he says. Kaili Goslant, a slender 10-year-old from Morrisville, whose mother is a police officer and whose father operates a ski lift, is kneeling for a sequence in the "spring" section. "Make believe you're following a spider along the ground," Oberly suddenly says. "Catch it!" Kaili follows—and grabs—the imaginary spider. And one more segment of *The Four Seasons* is alive.

A bearded man wearing blue jeans and a flannel shirt walks into the hall. He tells two visitors watching the rehearsal that he is John Hancock, father of Juliette Hancock, one of the *Four Seasons* dancers. He is a logger and the treasurer of the ballet's board of directors.

Luckily, he says, use of the Wolcott Town Hall costs just $10 a day. "If we had to pay at the commercial rate, we couldn't do it." Tuition is a minuscule $5 per class. But even these modest fees are waived for children whose parents cannot afford them. Donations trickle in from businesses and citizens. And the troupe applies hopefully for grants. The Vermont Historical Society, for instance, funded half the $1,600 for floor mats. Summers, when the resort town of Stowe puts on pop concerts, Wolcott Children's Ballet volunteers drive over the mountain to run a concession stand.

A few afternoons later, Kennet Oberly is teaching his boys class, while one mother, Peggy Sprague, watches from the sidelines. Her daughter, Kate, has just finished her class, and now it's her son Zachary's turn. When redhaired Zachary, who is 11, decided to take ballet, his mother was flabbergasted. "I told Zach the other boys at school might make fun of him, but he said he didn't care. He said it teaches him good balance."

After the boys troop out, Larissa Sintsova takes over another class. Her family moved to Estonia from Ukraine when she was 6, and she graduated from the Tallinn Choreographic Institute, becoming a principal dancer with the Estonian National Ballet. She brings to

the Wolcott Town Hall the Russian no-nonsense style of dance teaching. As the six dancers line up at the barre, she pats her midsection. "Stomach!" she says, and the dancers instantly flatten in front. Satisfied, Sintsova moves down the line to Jamie McCollough, who requires only a slight adjustment to the curve of her wrist. "Remember, Jamie—nice hands," she says. Sintsova demonstrates new steps. The dancers imitate her.

"Chest is nice, but back—like this," she says, arranging a girl's posture as if arranging flowers. She drops to her knees to study moving feet. She shows Jamie McCollough and Cody Leary where to look. Even the eyes—every molecule of the body—must be part of the dance. "Everybody! Elbows are very nice!" she announces. "But hands and arms—not forming a round line!" She has them run through the routine again. "Ever so slow, Jamie," says Sintsova. "And make the nice hands!"

Later that evening, the company's directors meet at the Puffer United Methodist Church in Morrisville. The issue is the new budget. "I always say, if they can run a tunnel under the English Channel and connect Britain and France, we can run a ballet company," says Mark Demers, minister of the Morrisville church and also of the Methodist church in Wolcott. "But I just saw a cartoon where you come out of the tunnel on the French side, and there's a huge guillotine poised over the exit, which seems to sum up our situation."

"We never made money on *The Nutcracker* at Christmas before, so why is it budgeted to earn $3,500 now?" asks Jack Benoze, a retired Manhattan marketing executive, scrutinizing the budget with a businessman's eye. "Well, I was encouraged by the attendance at Hardwick last year," responds treasurer Hancock. "I can guarantee the rent on the town hall will increase, because the cost of fuel has doubled," says board member Linda Martin.

Tuition fees come up. Are they too low, especially when low-income families aren't even charged? The troupe faces a $1,700 shortfall. "We don't want to turn children away," says Mark Demers. "We've never turned anyone away who couldn't pay, but what about those who say they'll pay and don't?" asks Jack Benoze.

The board decides to require 25 percent up front. But that does not solve one embarrassing problem: the directors owe a grant writer $1,000. "We have to prioritize," says John Hancock, sadly. He points out that he is already paying from his own pocket for routine expenses, like the much-used duct tape. Mark Demers volunteers to send the grant writer an apologetic letter, explaining the delay in payment.

The next afternoon, rehearsals for the spring production continue. Now the first performance is just days away. "Kennet, what's the story of *The Four Seasons*?" asks one small blonde girl. "It's about all the insects in the local swamp," Oberly says blandly.

He lines up his "insects" for their next run-through. The sequence calls for one dancer to lie prone and beat out time on the floor with her hands, while another girl does a headstand and three more dancers form a rotating ring. Oberly gives more instruction in the art of walking, showing how to keep the chest up and the eyes on the goal. "You're going somewhere," he says. The dancers do it all again. Finally, Oberly nods.

On May 19th last year, the Wolcott Children's Ballet began its spring tour with five shows for schoolchildren, performed at Johnson State College. (This fall they will be presenting *The Little Match Girl*, using music composed by several girls in the troupe who live on a com-

Taking a final bow after their Enosburg performance, the troupe basks in the triumph of their curtain call.

munal farm in East Hardwick, where they are homeschooled in music.) School buses from throughout northern Vermont rolled up to the auditorium each day, delivering 500 or so students per show.

For the first performance, the auditorium was filled with kids generating a DC-10 roar. One burly boy turned to the adults sitting behind him and announced with histrionic disgust: "We have to come every year." He pointed to his friend, who was even larger and rougher-looking: "He likes it!" The friend reddened.

Kennet Oberly walked onstage as the dancers cartwheeled and pirouetted behind him. He explained that the performance had no sets because it was abstract. "It's color, it's emotion, but there is no story line—it is pure movement, and it's about how we feel." The dancers were already moving across the stage, he said, because the seasons never start and never stop.

The dance began. And the 500 youngsters in the audience—amazingly—were attentively silent. At the end, raucous applause. Hoots. Whistles. As the audience left, several small girls danced out the door.

A few days later, the troupe began its next tour performance at the Hardwick Town Hall, where the stage floor is warped. It was, mostly, a bib overalls and billed-cap crowd. As the music filled the little hall and the dancers spun and leapt, seemingly in danger of tumbling off the tiny stage, toddlers in the audience took to the aisles to dance along. A tiny voice rose from somewhere in the hall: "I like the girls' costumes!"

Onstage, two little girls whistled like the November wind. Dancers whirled. Jamie McCollough danced her solo. *Relevé lent, arabesque, posé en arrière* . . . She gave the audience a radiant ballerina smile. And she had—definitely—"the nice hands."

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By Julia Markus

The fiery Nadar took Paris' pulse

A self-styled bohemian of the mid-19th century, the young photographer captured the spirit of the time in portraits now on exhibit at the Met

"What cannot be taught is the feeling for light." The statement of a French Impressionist painter? Not quite. So wrote Félix Nadar, the masterful mid-19th-century photographer who captured the bohemian world of Paris in his spectacular photographs of such friends as George Sand, Alexandre Dumas *père*, Gioacchino Rossini, Eugène Delacroix, Charles Baudelaire and the unfortunate Gérard de Nerval scant weeks before the poet's suicide. An intimate friend of the artists who inspired the tales that became *La Bohème*, Nadar even captured the young and pale prototype for the tubercular Mimi—not to mention the then unknown actress Sarah Bernhardt in a haunting series of photographs taken when she was 20. A Nadar retrospective, which originated in Paris at the Musée d'Orsay, is now at the Metropolitan Museum of Art in New York City through July 9, 1995. Springs Industries provided a generous grant for the show, which is centered on the cream of Nadar's portrait photography during his six golden years, from 1854 to 1860. More

Award-winning print series of mime Charles Deburau, as the clowning underdog Pierrot, came from the studio of Nadar and his brother, Adrien; it was the catalyst for a bitter lawsuit when Adrien claimed it was his work.

than a hundred master prints, many of them never shown before, have been brought together in the belief that Félix Nadar was one of the greatest portrait photographers of all time. The hope is that the French celebrities who seem to live and breathe in Nadar's early salted-paper prints will travel well, winning the photographer a wider general audience in the United States.

Still a legend today in his native France, Nadar had a temperament as red as his hair and his familiar jacket; as red as the audacious signature "Nadar" that would one day be scrawled across the glass facade of his lavish penthouse studio; as red as his liberal politics. Writer, journalist, caricaturist and avid aeronaut, as was his friend Jules Verne, Nadar eventually lost interest in photography and became internationally famous for his flights on the *Géant*, the largest balloon ever flown up to that time, and for his efforts to encourage the construction of "heavier than air" machines.

Born Gaspard-Félix Tournachon in Paris in 1820, just 19 years before the twin birth of photography in England and France, Nadar was the first child of Thérèse Maillet and Victor Tournachon. He grew up in the Latin Quarter, where his father, a printer and publisher, ran more of a salon than a business, dealing professionally with the liberal intellectuals and artists whom he respected and admired. His father's lack of business acumen would shut him down by 1833, and he died four years later when Félix was 17. A bright but troublesome student, Félix took classes in medicine shortly after his father's death, but he dropped this pursuit within a year or two to join the indigent "water-drinkers," a group of devil-may-care bohemian artists and intellectuals who gravitated to Paris' Left Bank.

It was an age in which romantic youth could reinvent itself, and many artists and intellectuals renamed themselves in defiance of the establishment. Their romantic "tags" came from a made-up medieval French; Félix tacked a nonsense syllable, "dar," onto his last name,

Nadar avoided cloying sentiment when photographing women, such as his wife, Ernestine (above), in 1890 and budding actress Sarah Bernhardt (below) in 1864.

scrambled it and shortened it, ending up with "Nadar." "The young people of that era were drunk on art, passion, and poetry; brains seethed, hearts palpitated with inordinate ambitions," wrote the critic and great romantic poet Théophile Gautier. Gautier was someone with whom Nadar had, as he later phrased it, "eaten bread and salt." Gautier would one day be captured on camera by his friend Félix, disheveled shirt tight over his barrel chest, hand in his trouser pocket holding back his wide-open cloak, scarf in disarray around his neck, hair and beard unkempt. Too bad one can't see the clashing colors, the startling pinks and greens Gautier often wore in defiance of the bourgeoisie.

Not surprisingly, Nadar's advancement was thwarted by his romantic temperament. For a decade—from 1838, just after his father died, until 1848, when revolution swept through Europe—he lived the bohemian life, rooming at times alone or with friends in Left Bank garrets or with a girlfriend in a small flat in Versailles. He eked out a living by writing theater reviews and sketching witty caricatures, which he sold to the small, satirical newspapers that proliferated in the city, supplementing his meager earnings by taking the occasional odd job with a publisher. Through his constant rounds of the theaters, the outdoor cafés, the annual painting Salon and other popular gathering places, he developed a wide circle of acquaintances.

There was no lack of excitement in Nadar's life. In the revolutions of 1848 he and a small band of liberals attempted to liberate Poland, ending up in jail for a while. In 1850 he had a stint in debtor's prison. But always he had his energy and his drive, and when his domineering widowed mother and his unresourceful younger brother, Adrien, moved in with him, he was forced to take responsibility for more than himself.

"A new art in an old civilization"

Nadar saw that the times offered salvation for his unemployed brother. By 1839 experiments in both England and France had led to major breakthroughs in photography, "the beginning of a new art in an old civilization," says Maria Morris Hambourg, the articulate and enthusiastic curator of photography at the Met. In France, Louis-Jacques Daguerre was able to capture images directly onto small, silvered plates; while in England, William Henry Fox Talbot invented what he called "photogenic drawing." This process produced a negative image on paper from which positive prints could be made, but there were problems: it took an hour or more to take a picture, and the fuzzy prints generated from the negatives were difficult to see.

During the 1840s daguerreotypes became extremely popular, as portrait studios sprang up in European and American cities to provide a substitute for painted

miniatures. But copies couldn't be made from these pictures, and it was Talbot's negative-positive process that would eventually win out, as experiments continued in the search for a way to make multiple prints from sharply detailed glass negatives. The real breakthrough came in 1851 with the development of a new emulsion called collodion, which caused photosensitive salts to adhere to a sheet of glass.

Portraits could now be taken in a few seconds, and numerous prints could be made from the glass negative. Commercial photography took off. What could become more fashionable, along the wide boulevards of Paris, than to have one's picture not painted but "taken" in this new way? Nadar suggested it to Adrien. Why didn't he become a photographer?

Photographing friends in the garden

Nadar financed his younger brother's training, brought him clients and ideas, and took up photography himself, collaborating with Adrien when he asked for and needed help. Nadar also set up his own ground-floor apartment at 113 rue Saint-Lazare as a studio for himself and began to photograph his friends in the garden. Already known in Paris as a literary man and witty caricaturist, Nadar would become the only widely known photographer of the French golden age who hadn't been a painter first.

In 1855 an increasingly confident and taciturn Adrien announced that he wanted to be on his own. But the brothers' split was not amicable. Going into partnership with two other backers, Adrien called himself "Nadar *jeune*"—"Nadar the Younger"—and signed "Nadar" in an imitation of his older brother's flamboyant scrawl, keeping the "*jeune*" small and abbreviated enough to mislead. The problem came to a head when a photographic project they had collaborated on—a series of photographs of Charles Deburau as the mime Pierrot—won the gold medal in the Exposition Universelle of 1855. The 15 original prints from this suite have been brought together in the current exhibition for the first time since that showing. Adrien took entire credit for the brilliant suite: Pierrot white-faced and white-clothed; Pierrot surprised, his expressive face an O; Pierrot laughing, listening, savoring a bowl of fruit; Pierrot as Everyman. The days of the theater of the people, the Funambules, where Charles and his father, Baptiste Deburau, France's original mime, performed, are long gone, but just as the genius of Baptiste is re-created in the classic film *Children of Paradise,* his son's performance is captured for all time in this brilliant series of early photographs.

The enthusiastic reception of this series moved Nadar to action. The brother he had tried to help was re-creating himself as "Nadar," not acknowledging the collabo-

French poet Charles Baudelaire (above) was one of Nadar's closest friends; little is known about Marie of Antilles (below), who posed for several portraits.

During the 1860s, Nadar became preoccupied with the idea of flight. He photographed two-foot-high model of helicopter in 1863; at right, he poses for studio shot.

ration involved in the photographs of Pierrot. Adrien was Tournachon; Félix was Nadar. Nadar wanted his name back. In late 1855, after negotiations had failed, Nadar sued. Whatever the psychological issues involved in this public drama of brother suing brother, most of Paris then and now seems to agree that Nadar was in the right. Certainly, the pictures Nadar took after the rupture and during the lawsuit, the pictures of his not yet world-famous friends in his garden and living room, were a burst of genius, six golden years of creativity. Perhaps the painful separation from his brother spurred him on. Each large photograph spoke, "I am by Nadar."

Indeed, each image was a profound collaboration between photographer and sitter. There are several of his friend Baudelaire, the symbolist poet who gave the world *The Flowers of Evil*, and whose caricature by Nadar is also in the show. In an image taken in Nadar's house in 1855, the intense young poet is captured in a rare relaxed moment, his face approaching a smile (p. 75). In another portrait from the same year, he sits on the chair once used by Nadar's strong-willed mother, whom he had set up in her own apartment after she left his home during the lawsuit. In this image, a subtly different mood is struck. Baudelaire and Nadar have been deep in conversation, and suddenly Nadar captures the friend he will one day nurse in his decline. His body as relaxed and fluid as the chair is straight and hard, Baudelaire looks out with half-opened eyes, as if into his destiny. At the turn of the century this unique salted-paper print would be signed in the upper left by the shaky hand of Nadar the Older, as he looked back on the days when he was a photographer.

It has been said that, during the golden years, Nadar never photographed a person he didn't like. What he had was an "intuitive grasp of who was in front of him," says Hambourg. As a critic of his own time put it, "All you have to do with Nadar is look. You don't have to know who the people are, he'll tell you." A portrait by Nadar was an image that seemed to rise naturally from the atmosphere around it, as alive as a portrait by the 17th-century Flemish painter he admired, Anthony van Dyck. As the conversation deepened and the camera clicked, the sitter was not only captured, he or she was reinvented.

Nadar loved to costume his sitters. The young Sarah Bernhardt, before she became the most-renowned tragic actress of her time, was thin and fragile. Nadar draped her to the shoulders in great folds of fabric, adding volume to the body while capturing the sincere intensity of youth and talent on the face (p. 74). On the other hand, he did not clothe "Mimi," the young woman on whom the consumptive heroine of *La Bohème* was based. Naked to the waist, she looks out at us wistfully.

Julia Markus is the author of Dared and Done, The Marriage of Elizabeth Barrett and Robert Browning, *published this year by Alfred A. Knopf.*

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In one of his underground photographs from the 1860s, Nadar used artificial light in the catacombs.

Some see in her look the glance of a woman of the demimonde—artist's model, artist's mistress. One sees also the fragility of youth, of life itself, in her face and body. Nadar's photographs of women, dressed or half-clothed, consistently reveal their psychological state; unlike the portraits made by many of his romantic contemporaries, Nadar's women are people first. One of his most sensual portraits emphasizes the arched neck and exquisitely exposed upper back of the popular French actress Marie Laurent (p. 81). It was a particularly interesting way to portray this woman's beauty, since, in fact, Laurent had a blunt, homely face and, when out of her décolleté ball gown, preferred tailored clothes.

Just as reinvention of the self was a romantic's birthright, this retrospective of Nadar's work is a re-creation of sorts. The curators of the show, Hambourg at the Met and Françoise Heilbrun and the late Philippe Néagu at the Musée d'Orsay, had more than 10,000 images to choose from, many of them created for sale. Yet the curators chose almost exclusively from among the unmounted prints on thin salted paper or gelatin-coated salted paper, which Nadar never exhibited, mentioned or sold. Most of these original prints have never been, nor were they intended to be, seen by a large audience.

It is a choice that would undoubtedly have pleased Nadar. At the Bibliothèque Nationale, Sylvie Aubenas, curator of the Department of Prints and Photography, showed me album after album of the *cartes de visite* that were churned out by the photographer's studio from 1860 until 1910, when he died. The invention of another Frenchman, Disdéri, these small portraits were sold to a public yearning to collect images of artists and intellectuals, much as we collect baseball cards today. Both Nadar's benevolent publisher and mentor, Claude Philipon, as well as his wife, Ernestine, whom he married in 1854, encouraged him to "think commercially."

More and more the absent celebrity

Fortunately, Ernestine, a straitlaced young woman whom Nadar would one day dub "The Good," brought the impractical Nadar a dowry. Although he could command 100 francs a portrait, a princely sum, from the late 1850s on he was increasingly distracted by his interest in flight. Ernestine implored him to take portraits himself, as people began to talk about the fact that he was never in his studio, leaving his work to his son or to others. More and more the absent celebrity, Nadar made exceptions in the 1860s, for the young Sarah Bernhardt and for the not-so-young George Sand, who donned a lawyer's wig in fun. He was the first to experiment with the use of electric lighting in photographs. When it didn't work so well in portraits, taking too much time for exposure, he went underground and let his lights play on the modern sewers and the exposed skulls in the catacombs of Paris (left). To show scale, he carted in lifelike and life-size mannequins that couldn't squirm.

But these land-based photography projects became rare, as aerial excursions lured Nadar from his responsibilities at his portrait studio. Initially, it was his explorations in photography that led him to flight; in 1858 Nadar began to take shots of Paris, first from a tethered balloon, then from a free-flying balloon. "Who or what could stop me once I was launched on one of my enthusiasms?" he would record in his later years, remembering those who had tried. Soon, virtually the only pictures he wanted to take were aerial shots. The master of French satirical caricature, Honoré Daumier, made a drawing of his friend at work; from the basket of a large balloon bearing the familiar logo "Photographie Nadar," Nadar, camera to his face, looks down and shoots the boulevards of Paris full of landlocked studios proclaiming "Photographie." It brilliantly captures the character of "The Great Nadar" as an artist and adventurer, not a businessman.

Gradually, Nadar's attention switched from aerial photography to flight itself. In 1863 he joined forces with a group of men, including Jules Verne, who wanted

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to promote the development of flying machines, which they envisioned as helicopters. Forming a society for the advancement of flight, they began to publish their own journal, *L'Aéronaute*. Later that year, to fund an experimental helicopter, Nadar bankrolled the building of the *Géant*, which was to be the largest gas balloon yet flown. Measuring 147 feet in circumference, it permitted 12 people to ride in its two-story basket. The hope was that people would be so impressed by the flights of this balloon that they would contribute money for the helicopter. For the next five years, all of Europe watched transfixed as Nadar flew over one city after another—Paris, Hannover, Lyons, Amsterdam. When the balloon crashed at Hannover, injuring both Nadar and his wife, he became a hero. The two books he wrote about his experiences further confirmed his legendary stature.

But as famous as Nadar had become by 1867, the year he sold the *Géant*, he had not garnered the funds he had hoped for. His fortune squandered, by 1873 he lived in semiretirement writing books and articles that looked back at his years of glory, gradually leaving the running of his business to his son, Paul. From the mid-1870s on, Nadar was no longer an active photographer.

It is not surprising, then, that the Met show focuses on the golden years when "Le Grand Nadar," a restless explorer, was most engaged in exploring photography. Many images from his galaxy of celebrities have long been well known, not for being fine art but for having appeared time and again as illustrations in biographies and other books. But historical value aside, old photographs, until recently, were generally seen as devoid of artistic and commercial worth. They certainly weren't prestigious to collect. National libraries traditionally conserve the relics of national history, but what motivated private collectors to go after old photographs such as those of Nadar?

The first-rate collection of Nadar's photography at the Musée d'Orsay, for example, was acquired both through sale and donation from Left Bank antiquarian bookshop owner André Jammes and his wife, Marie-Thérèse. Why did they decide to collect seemingly valueless photographs when they could have stuck to old prints and books?

It was like rummaging at the "Salvation Army," Jammes says today; one had to "dig in the garbage." He and his wife became interested after World War II. They knew the people, they collected the work. "The only thing we added, and we are very proud of this, was a bibliographical consciousness of photographs," he says. The Jammeses introduced methods of categorizing photographs that were at the time applied exclusively to fine prints and to books. He is understated in his pride about this essential step, which not only helped to salvage much of Nadar's best work but to preserve and to legitimize photography as a fine art and as a scholarly pursuit. The categorizing of old photographs, needless to say, would also help to create a market in a once-ignored medium.

But why did Jammes collect Nadar specifically? Like Mount Everest, it was there. "It was the biggest collection we were able to get, an entire studio in disuse after the death of Paul Nadar," he tosses off in his dry, offhand way. Succinctly, which is also his way, Jammes divides the history of collecting photographs into three stages. One, "the instinct of crazy people," those who have the collector's fever and save for saving's sake. Two, the classification of photographs, which he and his wife contributed. Three, the buying and collecting of photography by the great museums, such as the Metropolitan and the Musée d'Orsay. "We are now in the third period." He leans back in his chair. "Now I am retired; the task is taken by the museums."

One can't help but realize that the exhibition is, in a way that would appeal to Nadar, taking a risk. The curators in France wonder if Nadar's pantheon of French celebrities will appeal to an American audience. But certainly, many in Nadar's fascinating galaxy are world famous, and it is genuinely exciting to see them captured in such intimacy.

Actually, the risk is more daring than that. Right now in New York, Le Grand Nadar is speaking for himself with vivid grace and authenticity, through the living language of his work, with the support of an exceptional catalog. A romantic rebel has crossed the Atlantic—in one of those heavier-than-air machines he envisioned—to stake a claim: that portrait photography in his hands, at the medium's very beginning, was high art.

Nadar's masterpiece of sensuality presents the back of a French actress who was widely regarded as homely.

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By Stephen Fox

Chris Evans could always be relied on to pull a fast one

He's not well known today, but a century ago this unpredictable train robber and killer was sensational front-page news in California

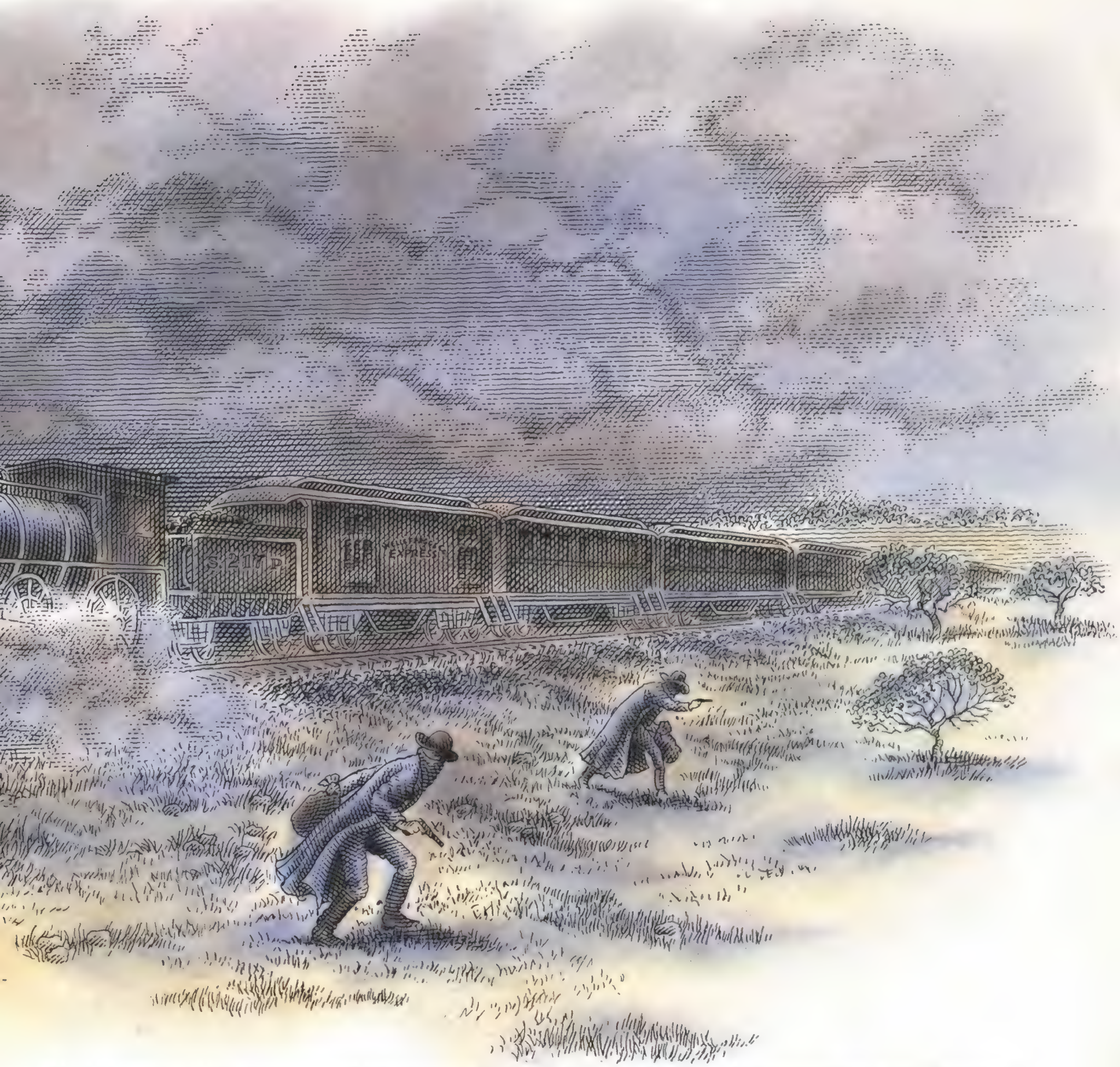
Five Southern Pacific heists had the same pattern. Two men would sneak onto a slow-moving train at night.

Everyone knows about Black Bart, the Daltons and Jesse James, but a century after his exploits created a sensation throughout the West, the most intriguing outlaw of his time remains a mystery. What to make of Chris Evans? He clattered across California's San Joaquin Valley in the early 1890s as a train robber and killer, and then as the elusive quarry of a bizarre, prolonged manhunt. Yet he was also a genuine political idealist—a mild, bookish fellow of literary flourishes with an earnest interest in public affairs—and a settled family man, attentive to his wife and seven children. The lingering puzzle is why this good citizen suddenly, in middle age, started robbing and killing.

The answer had more than a little to do with the way the monopolistic Southern Pacific Railroad (SP) dominated California in the latter part of the 19th century, charging exorbitant freight rates. Down in the San Joaquin Valley, south of Fresno, farmers nursed a particular grievance. In the Mussel Slough region near Hanford and Visalia, settlers had built an irrigation system that transformed arid country into rich agricultural land. Then the SP claimed that area for itself and won a lawsuit brought by the settlers. The farmers, who had formed the Settlers Land League, continued to fight the railroad.

The tightening standoff exploded on May 11, 1880, when a U.S. Marshal and his deputies met a group of farmers. In a sudden flurry of gunfire, seven men were killed. The leaders of the Settlers League were imprisoned, and the battle of Mussel Slough became a keened-over symbol of how the railroad operated in the valley.

Nine years after that bloody May morning, a string of unsolved train robberies started hitting the SP. Spread over 42 months, five episodes—all but one within 60 miles of Mussel Slough—showed a repeating pattern. At night, two men (one tall, one short) sneaked onto the front of a slow-moving southbound train. They wore masks and full-length overcoats. Guns pointed, they stopped the train at an isolated spot and attacked the Wells, Fargo express car with dynamite. Thrice success-



Masked, wearing long overcoats and brandishing their guns, they stopped the train at an isolated spot. After blasting the Wells, Fargo express car with dynamite, they beat a hasty retreat under the cover of darkness.

ful and twice foiled, the bandits left four men killed and several wounded, and made off with more than $25,000 in gold and silver coins. The outlaws said they were avenging "the Mussel Slough robbery," as they called it.

The morning after the fifth robbery, patrons of a saloon in Visalia were discussing the latest stickup. One man, George Sontag, talked too knowingly about the crime. As it happened, he had only recently been recruited into the train-heist business by his brother John. Someone tipped off the sheriff. A deputy and a railroad detective found George at the home of his friend Chris Evans on the outskirts of Visalia. After George began giving incriminating details at the sheriff's office, the deputy and the detective went back to the Evans house to look for his brother.

Evans was 45 years old in 1892. Picture him on the verge of notoriety: 5 feet 8 and about 175 pounds, with brown hair, hazel eyes, a reddish beard and an alert,

Illustrations by Toni Kurrasch

fidgety manner. He walked fast, springy in both knees, and could easily cover 45 miles a day. Talking in his sharp, squeaky voice, he smiled easily and wagged his head. He worked at various manual jobs—farmer, lumberjack, miner. With his wife, Molly, and children, he had lived in Visalia for a decade. Their small house and unremarkable lives looked plain, even austere, but with surprising touches of luxury: stylish dresses for the three daughters, brocaded mohair living-room furniture, and a fancy hand-tooled saddle for Eva, the eldest child.

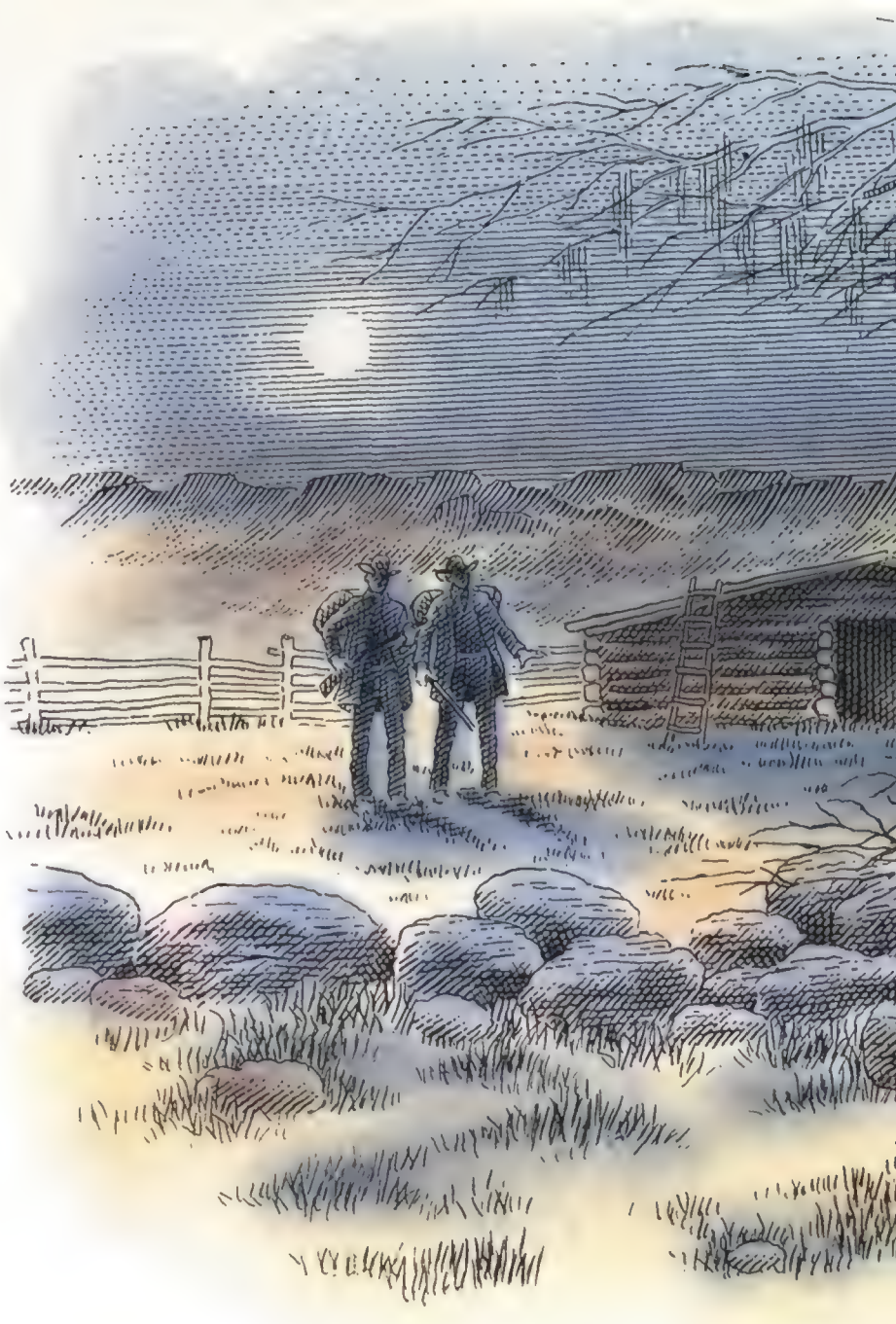
Evans' only apparent distinction was his well-stocked mind. "He surprised me on many occasions by his extensive knowledge," the local newspaper editor once observed. Evans loved to recite poetry; walking the floor with a baby, he might declaim all of Tennyson's "Locksley Hall." After a long day of hunting, he would draw near the campfire and open a book. He developed the reading tastes of a well-informed Victorian gentleman: Shakespeare, Scott, Swinburne and Tennyson for literature, and Darwin, Huxley and Spencer for nonfiction.

Although reading broadened his outlook, life in San Joaquin led Evans to focus on railroad politics. Molly's family had farmed in the valley for decades; one of her uncles lost his land in Mussel Slough. In 1885 Evans planted beans on 20 acres south of Visalia. The SP raised its shipping price at harvest, and he lost money. Over the next two years he managed grain warehouses for a local bank patronized by farmers and ranchers who told him more horror stories about the SP.

Thus Evans was ready to sympathize with John Sontag when they met in 1887. Working for the SP as a brakeman, Sontag had been impaled on an iron rail at the Fresno yard. It broke three ribs and punctured a lung. After two months in the SP hospital in Sacramento, he asked the railroad for a light job but was offered only a return to braking. Sontag limped back to Tulare, wounded and furious. Evans took him in and gave him work.

Evans was in the barn behind his house when Will Smith, the SP detective, and deputy sheriff George Witty came looking for John Sontag. After Eva ran out of the house to get him, Evans hurried in the back door, picked up a revolver and met the lawmen in the parlor. "What in hell do you want?" he demanded. "Where is John Sontag?" Smith replied. Sontag stepped from behind a portière, shotgun raised. Smith and Witty whirled around, bumped into each other and ran.

A defining moment. Innocent men might have let the intruders go—after all, they were fleeing. Instead, Evans and Sontag started shooting. Witty, wounded in the shoulder and jaw, fell down and pleaded for his life. Standing over him, Evans thoughtfully revolved the cylinder of his pistol but didn't shoot. Smith, soon known as the "sprinting detective," ran off for reinforcements.



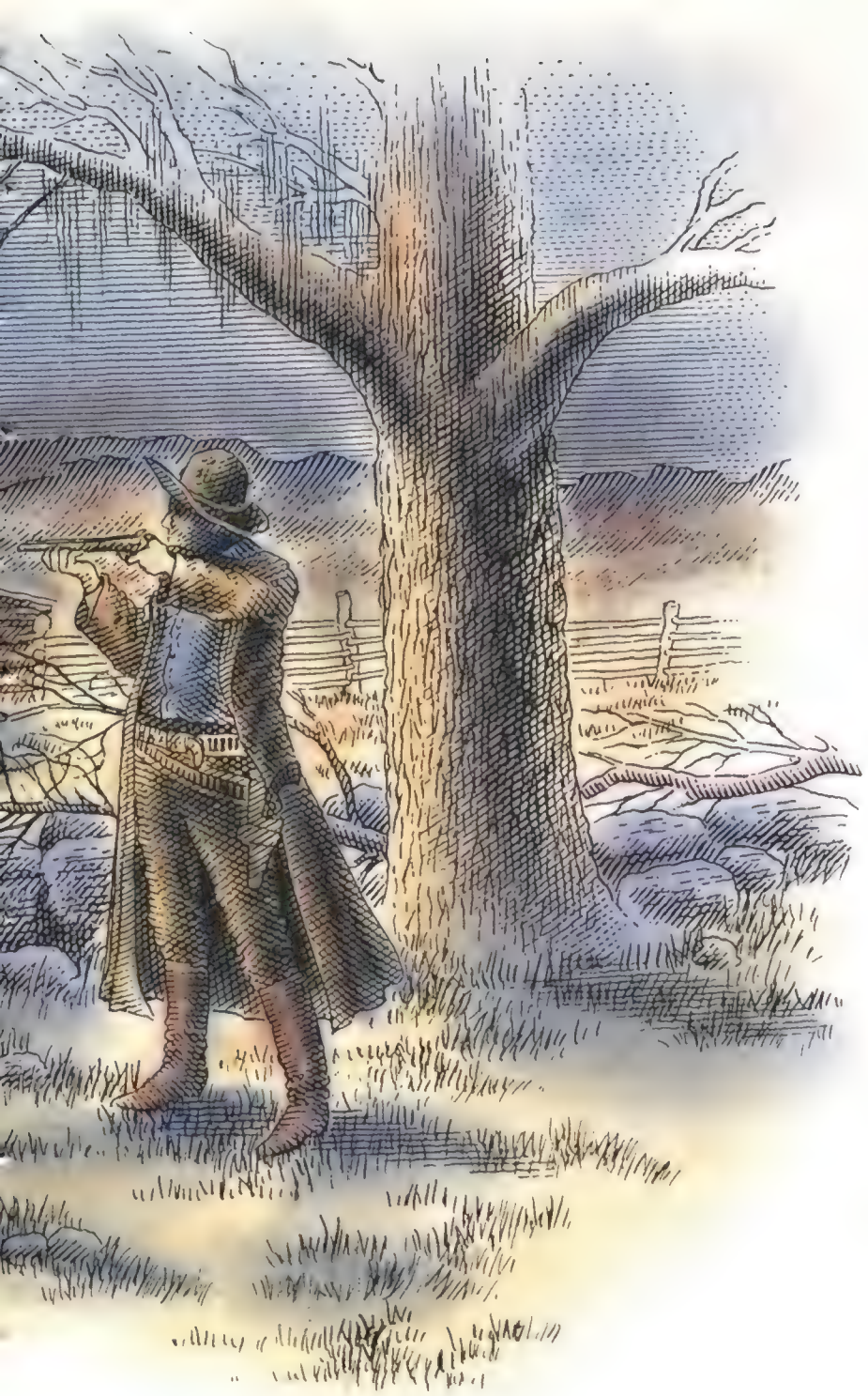
A deputy sheriff saw Evans and Sontag moving in the moonlight. After a verbal exchange, he shot at them.

Evans and Sontag drove the lawmen's rig a few miles out of town—then did the unexpected. While posses fanned into the countryside, the fugitives headed back home for supplies. Late that night, another deputy, Oscar Beaver, who had the place under surveillance, saw them moving in the bright moonlight. "Who's there?" Beaver shouted. Sontag asked if he had a gun. No answer. Then Beaver fired. Evans and Sontag boomed back with shotguns and walked toward the deputy. When Beaver shot again, Evans and Sontag emptied their shotguns into him, then fled.

At daybreak other lawmen tiptoed up to the barn and found no robbers, just some remnants of cloth that seemed to match the masks used in the fifth holdup. Beaver died that day. A few weeks later, detectives digging in the Evans yard found coins from the latest haul.

On the run, Evans relived his coming-of-age. Born in Vermont, he was raised near Ottawa. "The great struggle for freedom was going on," he later wrote, "and I left my

Stephen Fox is a historian who lives near Boston. His latest book is Big Leagues: Baseball, Football, and Basketball in National Memory *(Morrow, 1994).*



home and entered the Union Army to liberate the slave." At 17 he enlisted under an assumed name, so his record can't be verified, but he later told war stories about serving in the 2d New York Dragoons. Under Phil Sheridan in the Shenandoah campaign, Evans said, he fought at Winchester and Fisher's Hill and was wounded in the leg at Cedar Creek. Later his unit was sent out West to fight Indians. There he left the Army and struck out on his own.

Evans and Sontag went north and east into the Sierra foothills. The terrain provided thick, trackless brush for hiding and good vantage points for scanning the trails below. Evans owned a mine in Sampson's Flat, near Dunlap, and had been lumbering and prospecting that area for two decades. His friends up there also hated the SP.

The SP and Wells, Fargo offered a $10,000 reward, which drew packs of bounty hunters. The railroad also brought in Vic Wilson and Frank Burke, professional manhunters from Arizona, with two Apache trackers. Wilson and Burke—"big square-jawed, clear-eyed fellows, slow of speech and much given to similes from the cow ranges," according to a newspaper account—strolled around Visalia displaying their sawed-off Winchester rifles as though they wanted word of their arrival to reach their prey in the mountains.

They encountered Evans and Sontag at Jim Young's cabin in Sampson's Flat, where the fugitives had stopped for breakfast. The outlaws saw Vic Wilson leading a nine-man posse toward the cabin, unaware of who was inside. The cabin had no back door, no way to escape. It lay at the bottom of a basin, surrounded by rocks and trees offering cover to shooters.

The lawmen approached to within 15 feet. "Now!" called Evans. He poked his shotgun through the window and drilled Wilson. Sontag shot Andy McGinnis, a deputy sheriff. The outlaws rushed forward past the wounded men and kept shooting. Evans felt a bullet crease his head from behind; spinning around, he finished McGinnis. As the rest of the posse ran away, leaving the dying Wilson, Evans and Sontag escaped.

"Chris Evans is a remarkable man"

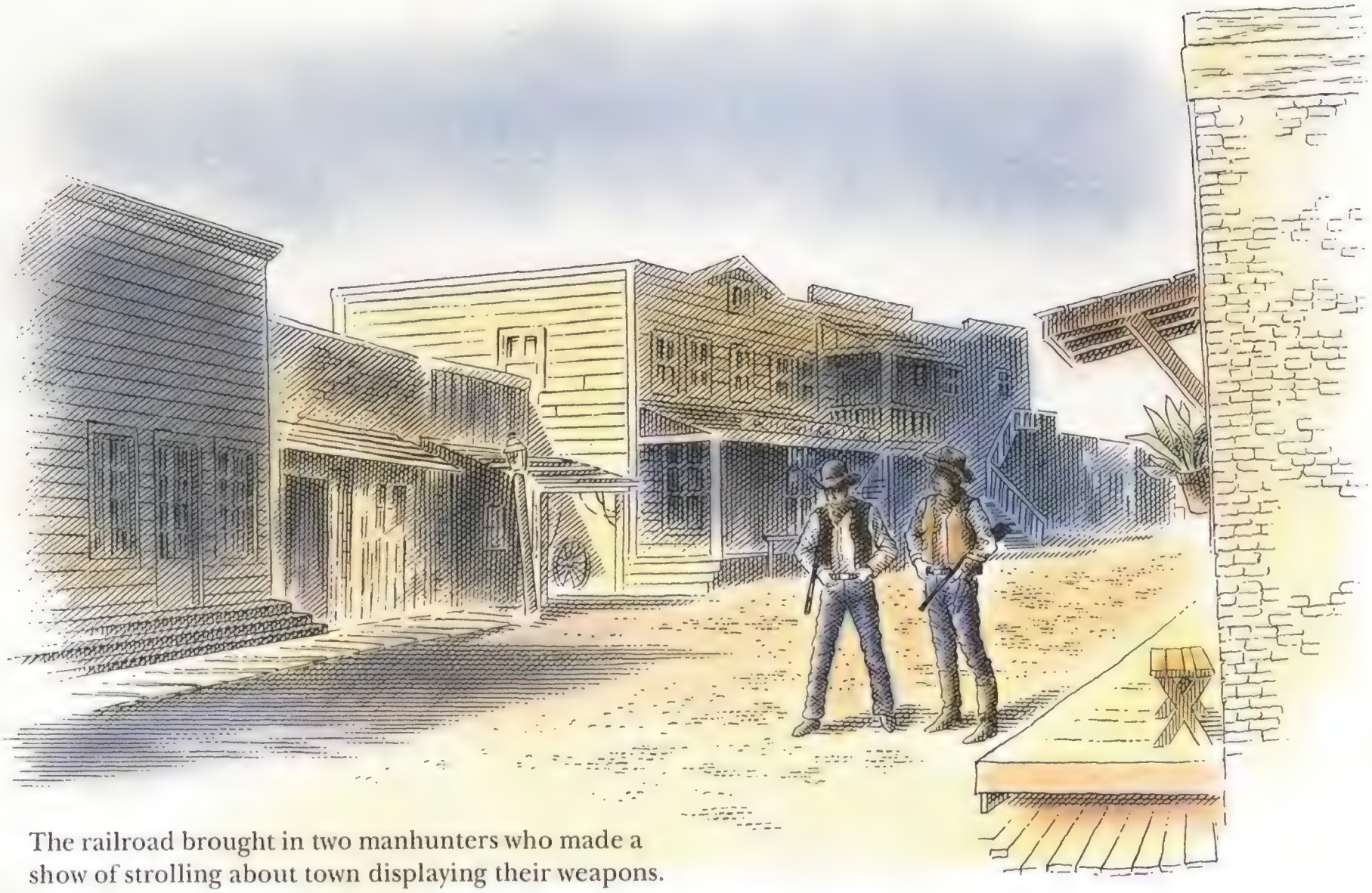
The toll from robberies and manhunts now stood at seven killed. The pursuers had been consistently stupid and spineless; the outlaws were enhancing their reputations. "Chris Evans is a remarkable man," said a Wells, Fargo detective. "He may always be expected to do the unexpected. That is what makes him dangerous."

A few days after the shoot-out at Young's cabin, Collis Huntington arrived in San Francisco from New York. As president of the SP, he made an annual inspection of his line in California. In his 71st robust year, Huntington was massive and rumbling. Large-featured, he had a fringe of white hair and a wide, bristly white beard.

One reporter asked him: "Supposing for the sake of argument that there is much complaint in California against the railroad's rates, do you think it a just complaint and do you think you have a right to use the railroads in politics?" Mildly prodded, Huntington dismissed talk of unfair rates. As for politics, he replied with oblique candor, "The law of self-preservation is a universal law, and if the railroad is attacked by the demagogues of the state it will defend itself."

The SP tried to buy off the *San Francisco Examiner*, the railroad's most effective enemy in California. Publisher William Randolph Hearst was just starting his clamorous life in the newspaper business, and his first great political campaign became an assault on the SP. The *Examiner* hammered relentlessly at the railroad's rates, service and political corruption.

Usually Huntington's San Francisco operative, William Mills, could keep a newspaper in line with free passes and a few thousand dollars' worth of annual "advertising" payments. Such methods had cemented "amicable and even cordial" relations, by Mills' reckoning, with all but five newspapers in California, Nevada and



The railroad brought in two manhunters who made a show of strolling about town displaying their weapons.

Arizona. To subdue the *Examiner*, the SP made arrangements to pay the paper $30,000 in 30 monthly installments, ostensibly for advertising.

It would be hard to believe that the deal was not strained by the *Examiner*'s coverage of Chris Evans. Henry (Petey) Bigelow, one of the paper's ace reporters, decided to interview the outlaw. First he went to Visalia to meet the Evans family. Bigelow had a guileless face and a knack for charming women; Molly sighed and let him in. Bigelow was surprised by the "sad, sweet-tempered" mother and "eager, well-trained, loving children." They told harrowing tales of gunfights and terror, harassing neighbors, opened letters, detectives who tore up the furniture and threw books around, and constant surveillance by greedy, itchy-fingered bounty hunters. Bigelow then wrote a story wholly sympathetic to the family. "It is hardly right," he declared, "to torture the unoffending mother and innocent children."

Up in the mountains, Evans proclaimed the article his first fair treatment by a newspaper. Thanks to daughter Eva, he had been able to remain in regular contact with his family. Once a week or so, the intrepid 16-year-old would dress in boy's overalls and saddle a fast little bay mare. After nonchalantly riding out of town, she would slack the reins, lean forward on the mare's neck and let her run to the rendezvous.

Evans sent word that he would meet Petey Bigelow. At a cabin in the mountains, the reporter found Evans and Sontag sitting on the bed, guns bristling. After two months on the run, they were surprisingly well dressed, with new shoes. Evans—jaunty, no apologies—dictated his version of events.

Hearst splashed the scoop across six columns on the first two pages. The *Examiner* let the fugitives speak for themselves. They had robbed no trains, Evans said, and "we have never killed anyone except in self-defense." Both men seemed cool and determined, Bigelow reported. "We have plenty of provisions now, a first-rate fortress, and we are ready to defy any of the posses that may come our way." Local residents were obviously shielding the fugitives. "The entire district is with them," Bigelow concluded. "I don't think there is a man, woman or child for a radius of fifty miles that would not give them all they wish to eat and drink."

After the Evans interview and other provocations, the SP suspended its payments to the *Examiner*. "Mr. Hearst is not judicious," Mills told Huntington. "Here are a lot of Bohemians running a newspaper whose proprietor is a young millionaire full of extravagant notions as to his consequence in the world. It is not easy to influence a situation of that kind."

Evans and Sontag settled in for the long Sierra winter, building a shack against a large, slab-sided rock and papering the walls with lurid newspaper stories about

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themselves. Soon they found an even more inaccessible hiding place that Evans—reaching back to his Army days—called Fort Defiance. Behind a waterfall, beneath a granite cliff, they used pick and shovel to enlarge a bear's cave into a lair about 12 feet long and 7 or 8 feet wide and high. They piled rocks at the entrance, leaving loopholes for guns, and stocked the cave with food, ammunition and a coal-oil stove. In the dense surrounding chaparral they cut mazes of trails leading nowhere to confuse pursuers.

As winter wore on, the fugitives frequently emerged from their cave and visited friends for hot food and card games. "We go where we please," Evans later wrote in a breezy note to Molly, "and not one of the detectives will enter the house of any man, that is known to be friendly to us. Young's cabin is photographed on their minds." With snow blocking the roads, Eva no longer came to visit, so occasionally they went home, even staying for two weeks at Christmas. It was a strained imitation of normal life staged to comfort Molly. "In my father's laughter there was a shrill note," Eva later recalled. "Otherwise, he was just his jolly and lovable self."

It was such a trip home that finally led Evans and Sontag into a deadly ambush. When spring came, the fugitives moved down to a hideout in Wilcox Canyon, only 18 miles east of Visalia. In early June, ten months into the manhunt, Molly's brother Perry Byrd told lawmen they should watch for the outlaws near a place called Stone Corral, on the road to Visalia, six miles west of Wilcox Canyon. Hiram Rapelje, a deputy sheriff and crack shot from Fresno, and three other men went to Stone Corral and waited for a week in a cabin at the bottom of a ravine. On the eighth day, Rapelje saw Evans and Sontag approaching. "It was our calculation to kill them without giving them any show whatever," Rapelje later explained. "This may sound a little cold-blooded, but they had made the pace, would undoubtedly fight instead of surrendering, so we planned to treat them just as they treated McGinnis and Vic Wilson."

The gory shoot-out at Stone Corral

Evans spotted them and fired. The outlaws ran for the only available cover, a low pile of straw and dried manure. Bullets zinged back and forth. Evans was shot in the side, in his right eye and right wrist. Sontag was hit in the shoulder and forehead. After 30 minutes, the sun set. Sontag, groaning and pleading with Evans to kill him, could not move. Evans covered Sontag with straw and then started crawling away on his stomach through the grass. When Rapelje shot him in the left wrist, Evans sprang up and ran for the hills.

What followed during that night testified to a ferocious will. Bleeding and thirsty, disoriented and hurting, both arms dangling useless and one eye gone, Evans set out for a nearby ranch. He kept bumping into trees and rocks, falling down and struggling back up. He passed a house but could not open the gate to get water. At dawn he tried to scoop the sand out of a dried creek bed with his feet but failed. Finally, Evans reached the ranch house, where he worked the water pump with his elbow and drank deeply. Leaving the pump covered with blood, he then went upstairs and fell asleep, only to be discovered by the owner. Lawmen took Evans down to Visalia and jailed him there. A doctor dressed his wounds and amputated his left arm three inches above the wrist. In the adjacent cell, John Sontag was dying of lockjaw. The *Examiner* sent five men by special train to cover the story.

Next, a play within the play unfolded as art exaggerated life. R. C. White, a playwright in San Francisco, invited Molly and Eva to portray themselves in a gunfire-spiced melodrama. The family would receive 25 percent of the profits. As rehearsals began, a reporter asked Eva about stagefright. "Pooh! That's nothing to frighten anybody, I should think," she replied. "It can't be anything to going through the scenes in reality, as we have done."

On opening night, the National Theatre was packed with some 2,800 people, 600 above capacity. *Evans and*

Once a week or so, Evans' daughter Eva saddled a fast little bay mare and rode out of town to visit him.

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The posse was only 15 feet away when Evans rammed his shotgun through the window and drilled the leader.

Sontag, or the Visalia Bandits presented an outlaw's take on the saga. "Wily Smooth," the mustachioed villain, was a slimy caricature of Will Smith, the maligned SP detective. He leered at the winsome blonde, Eva. She spurned his advances and declared, voice rising, "I have imbibed a hatred for the blood-sucking corporation that destroyed the homes and happiness of the people at Mussel Slough, and I have imbibed a loathing for you and the rest of the sneaking detectives who are ready to commit any crime at the dictation of your masters." The audience roared its approval.

Another scene re-created the last holdup; unnamed masked robbers called it revenge for Mussel Slough. Wily Smooth slunk onstage and buried incriminating coins in the Evans orchard. "When suspects once get in the toils of the railroad," he snarled, "they are doomed." Chris Evans appeared, with bright music playing and the crowd cheering tableaus of family bliss. The play rushed on to the betrayal by Molly's brother and the final battle at Stone Corral. "Oh, what a relief would be the calm, cold hand of death!" the wounded Evans declaimed. "With this pistol I might defy them still and die fighting like a man, but I am weary, weary of it all and long only for my wife, my little ones and death."

The play's reception reflected popular opinion about the case—and about the SP. Newspapers praised the show, Eva's performance especially. ("I would gladly become an actress," she allowed, "that is if there were money in it.") The run in San Francisco was extended from two weeks to four. On the road it played for months to approving crowds in Los Angeles, Sacramento, Stockton and throughout the San Joaquin Valley.

At Evans' trial for the murder of Vic Wilson, the most damaging witness was George Sontag. Previously convicted and sentenced to Folsom Prison, he'd been injured in a failed jailbreak for which Eva Evans had helped obtain guns. Now, his brother was dead and the two families were squabbling. When the authorities promised to go easy on Sontag in exchange for his cooperation, he confessed what he knew about a number of train holdups.

Evans sat in court wearing smoked glasses and a three-piece suit, smiling and chatting, reading law books and taking notes. "He is aware of his greatness," a reporter noted, "and the gaze of the crowd does not disconcert him." He looked rattled only when Sontag took the stand and repeated his confession. Evans' attorneys argued that he had merely defended himself from certain death, but four members of the Wilson posse described the shooting of their leader as unprovoked murder. Eventually the jury convicted Evans of first-degree murder but sentenced him to life in prison instead of death by hanging.

Collis Huntington was spending the winter in San Francisco when the verdict came down. Shortly after the trial, he clashed with J. W. Reese, a fruit grower and wealthy landowner from Fresno. When Reese complained about the SP's shipping rates, Huntington told him that he was misinformed. Reese responded with a sharp six-page letter, recently found among Huntington's papers. "You made your legislature pass a law making train robbery a capital offense," he wrote, "but although I was foreman of the jury that sent Evans up for life, I do not honestly believe you could find twelve men in this valley who would send a man up for life for robbery of your trains, without murder."

"Wondrous luck is still with him"

Evans wasn't done yet. For two weeks he remained in the Fresno jail, awaiting transfer to Folsom and writing his autobiography. The day after he finished his memoirs, he escaped. The ever-loyal Eva had recruited Ed Morrell, a restaurant waiter who brought Evans his meals. Three days after Christmas, with only a single deputy guarding the jail, Morrell hid two guns in the dinner tray. Evans summoned the deputy, and he and Morrell walked out the front door.

Evans and Morrell headed east, toward Sampson's Flat. The SP and Wells, Fargo left the pursuit to Jay Scott, the embarrassed Fresno sheriff. Scott's cold, wet posse trudged on through rain and snowstorms, following leads that went nowhere near Evans. "It is evident," an accompanying reporter commented, "that the wondrous luck that has carried him safely through so many tight places is still with him."

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Hearst's *Examiner* stayed on the case. After a month, at a cabin in Sampson's Flat, Evans gave an interview to another *Examiner* reporter. Once again the paper blared an Evans exclusive. The fugitives seemed carefree and confident, full of jokes and funny stories about their inept pursuers. "We have not been particularly careful of ourselves," Evans said, "and have slept in warm cabins and eaten the best in the land since we left Fresno." A few days after that second scoop, the *Examiner* also published most of Evans' autobiography, filling seven columns of newsprint. The outlaw and his favorite newspaper kept playing to each other against the railroad.

Up in the hills, though, Evans was wearing down. Nearly two months into the second manhunt, he heard that one of his children was sick. He returned home, and when 50 armed men surrounded the Evans house, he gave up for good.

Evans served his sentence quietly, working at the Folsom library and writing a utopian novel. After almost a decade in prison, in 1903 he petitioned California's governor for parole. "I am not innocent of wrongdoing," he wrote, "for if I had not violated the Law, I would not be in Prison but they were errors of the Head, not of the Heart. I permitted my sympathies for the victims of Corporation Greed to overcome my judgement." Notwithstanding the earnestness of his plea, Evans was turned down.

He was finally freed by a fellow enemy of the SP. Hiram Johnson was elected governor in 1910 after promising to rid California politics of the railroad. The following year he signed Evans' parole. The old outlaw lived obscurely for the last six years of his life, emerging only for the publication in 1914 of his novel *Eurasia.* The book described an ideal society organized as "a great industrial army." The government owned all major industries. The railroads, built by the military, offered fair rates as a public service. Any monopolistic practice or exorbitant pricing was a crime that brought five years of hard labor. In such a perfect world, by Chris Evans' reckoning, Collis Huntington would have been the one who ended up in jail.

At his trial, Evans wore smoked glasses and a suit, smiled and chatted, read law books and took notes. "He is aware of his greatness," one reporter wrote, "and the gaze of the crowd does not disconcert him."

Mrs. Rogers' 4th grade class proved heroes really do live outside comic books.

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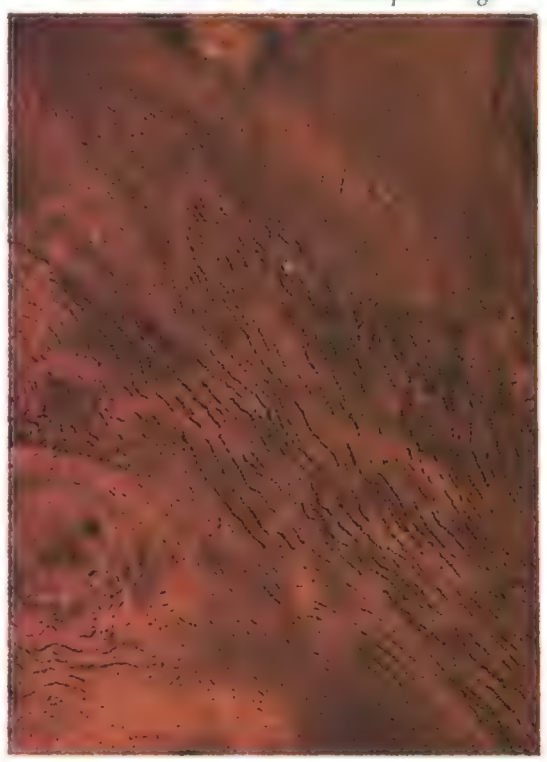

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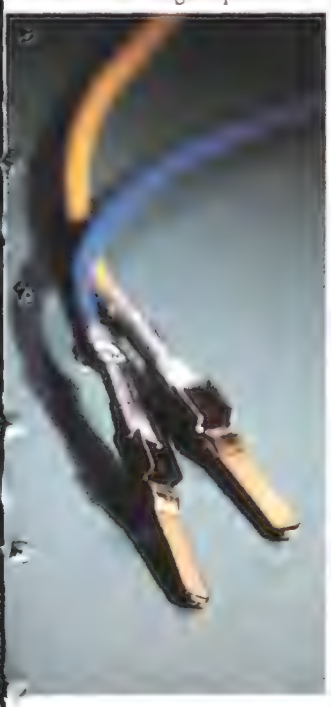

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Text and photographs by William Burt

On the trail of the stealth birds of our wetlands

With its cunning camouflage and some mighty morphing, a bittern can be one tough bird to find—and a tough customer, to boot

Wading through deep marsh at night can give you a feeling of being in desperate circumstance—as if escaping from a penal colony, say. Nonetheless, I was exactly where I chose to be that night: waist-deep in an Iowa marsh, feeling my way through clumps of cattails. I was looking for a strange unbirdlike bird, a bittern.

I have always been drawn to elusive, all-but-invisible birds that slip wraithlike through our continent's marshes, and each year in June I have endeavored to seek them out and photograph them. Over a span of nearly 20 years I prowled marshes from Manitoba to Maryland in order to photograph all five species of North American rails, rarely seen denizens of our wetlands. Now my aim was to photograph the two U.S. species of herons called bitterns, very different from each other in size and behavior but very much alike in their secretiveness and love of darkness.

The least bittern, tiniest of herons and the object of my Iowa search, in some respects has more in common with the rails than it does its own kind. Like its sleek, mouse-quick associates, it avoids open spaces and spends life submerged in a covert world of reeds. Like the rails, it rarely opts to fly but makes its way through the marsh on foot, shaping itself to glide through the narrow spaces. Naturalist John James Audubon had a pet least bittern that was more than two inches wide but could slip through bookends spaced only an inch apart.

Unlike the rails, however, this bittern climbs high and travels the upper story of the marsh, clasping and clambering through the canopy like a gymnast; not only does it traverse the tall, tapering blades, but it straddles them, clings and hangs, even juts out horizontally. And when you catch the bittern by surprise, it draws into a creation so reed-thin, so vertical that it seemingly melts away, gone all but for the incandescent yellow eyes.

Years ago, during rowboat explorations of Connecticut River marshes, I would sometimes start one of these miniature herons. Usually it was already airborne by the time I saw it, providing but a fleeting view before losing itself again in the marsh. And I never managed to find a nest, though I thrashed about on foot more than once in hopes of doing so.

Two years ago I decided to try my luck in Iowa, where least bitterns are known to live almost colonially in certain marshes. That is, some years they do; it depends upon water levels and, of all things, muskrat population cycles. During "boom" years, muskrats eat away the cattails and increase areas of unvegetated water until their marsh becomes an open lake. Then, their livelihood devoured, the muskrats die off or migrate, and the lake fills back in with green. It is in the middle of these thinning and refilling cycles, when areas of cover and open water are roughly equal, that the bitterns thrive.

Once I got to Iowa, however, I found it was a boom year for muskrats, and consequently a bust year for the bitterns. During my night of slogging through a dark marsh I did get several pictures, one of a feisty male who lunged at my light with his bill, then put on an astonishing performance. He leaned out horizontally and stretched thin, then swung around so his neck pointed directly to the nadir, meanwhile keeping eyes and beak directed up at me in an absurd contortion. Continuing with his repertoire, he swung one wing out fully open, displaying it like a flag. But when I fired my flash he slipped back into the cattails and disappeared.

But if it was an off year for least bitterns in Iowa, it was a bumper year at my next stop, the Squaw Creek National Wildlife Refuge in Missouri. There refuge manager Ronald Bell and his assistant, Mike Callow, told me that in a 1993 census of the marsh by airboat, they had counted 40 least bittern nests.

That afternoon the three of us, clad in chest waders and with ear protectors clamped in place against the airboat engine's howl, roared off over open water, then slowed and threaded our way among the cattails. Finally Ron cut the engine and we unclamped our ear protectors. "Here's where some nests are concentrated," he said. "Let's go see." We slid overboard, one by one. When Ron and Mike hit bottom, the water was waist high; on me it was a little higher.

Exposed on her nest, brooding American bittern shows maternal valor as she bristles but stands her ground.

A small, lithe body and long, grasping toes allow a least bittern to streak through the vegetation of its marshy home, literally burrowing through dense reeds and cattails to escape predators—or photographers.

The nests were built in the cattails a foot or two above the water; some held eggs, some, young. The eggs, usually five or six, were pearly white with the palest hint of blue. When I peered into a nest with youngsters, true to their bittern kind they huddled and stretched thin and looked up to the sky, their bills united in resolute but unimposing phalanxes. They were unprepossessing characters, woolly and bedraggled, like unkempt caterpillars.

There were maybe 15 nests in this little bittern city, but not an adult was to be seen. Before heading back, Ron aimed the boat into a small cove and cut the motor, and we drifted by yet another nest. Mike grabbed the cattails and pulled us in close. "The bird's inside," he casually reported. I slid out and Mike handed me the photographic gear, but the bird sat tight, too hidden to make a picture. Mike then rustled the cattails with his hand, and out came an angry warrior with feathers bristling and yellow eyes afire. The bittern poised as if to strike and glared at me, then directly he climbed back into that basket in the cattails, a determined tenant. Mike resumed the rustling—this time with a little branch, mindful of that rapier beak—and out the bittern came again. Indignant as before, he eyed the branch and struck it wickedly. Reflexively Mike withdrew, the bittern glaring fiercely. And now we let him be. My photographing him would not cause him to abandon the nest, but I don't like to disturb birds longer than necessary. He'd proved his mettle, and I had my picture. He climbed right back into his nest as we departed.

Before I left the refuge, I asked Ron and Mike if they had any suggestions about where I might find my next quarry, the American bittern. Mike proposed North Dakota where, he explained, he'd seen many bittern nests in upland fields. "We found them when doing duck-nest surveys."

In fields? The American bittern, that quintessential marsh bird?

In fields, he assured me; then a broad smile broke across his face. "There was a trick we used to play on young biologists just out of school," he said. "We'd be

out checking duck nests we had marked, but one of the markers was set up at a bittern nest. 'OK,' we'd tell him, 'now you check that nest over there,' and he'd be in for a surprise. The 'duck' would rear up and hiss and scare the wits out of him."

The American bittern is a bulky bird, big as a good-sized hawk, too big to live in the jungle thickness of a marsh, you might suppose. But live there it does. With elastic ease it moves among the cattails, and like its lesser relative it is capable of expansion, contraction, contortion and distortion. And it is a masterwork of camouflage. Pass by it and it stretches skyward and freezes, a habit known as "bitterning," and merges with all the surrounding vertical world.

Unlike the least bittern, ever clambering and seeking, the American takes a more sedentary approach to life in general. It is content to sit and wait and take what comes its way. It sits hunched or stands leaning like a crooked stake, invisible to unwary frogs or fish or tadpoles or even snakes, or anything else that happens by too close and is not too big to swallow: it can come alive lightning-quick with the strike of a dagger bill.

One of the most curious things about the bittern is the deep pneumatic call it sends across the marsh in spring, usually under cover of dusk or dark. It is without a doubt one of the wildest, weirdest of all sounds in nature. When a bittern calls, you do not really hear it, at first: you sense it, you feel its basso presence as you would a distant thunder rumble.

The call can sound like a pump, or sometimes, at great distances, like the smacking of a stake into soggy ground. Indeed, this strange call has earned for this bittern a rich repertoire of nicknames: plum-pudd'n, thunder-pumper, stake-driver, pump-er-lunk, dunk-a-doo, barrel-maker, bog-bull, butterpump, mire drum, water-belcher. Actually the "voice" of the bittern really is a sort of well-modulated belching, produced as it is by expulsion of great gulps of air.

Due to their unnerving calls and their propensity for habitat unseemly to us humans, large bitterns have been seen as evil since biblical times. In my own state of Connecticut, townsmen gathered in the 1700s to rid nearby swamps of the dreaded creatures. Today, in the East especially, American bitterns have declined severely as their marshes have been drained and filled and choked out by invasions of plants that do not belong there, such as phragmites and purple loosestrife. Wayne Petersen of the Massachusetts Audubon Society notes with alarm the continuing disappearance of nesting bitterns in that state, due to the withering away of marshes. But perhaps most alarming of all, he adds, is that they seem to be abandoning even those few suitable territories not yet fallen, suggesting the influence of other agents, such as pesticides or acid rain. I know of only one pure pocket of Connecticut marsh remaining in which the American bittern thunder-pumps in spring.

And so, following Mike Callow's advice, I found myself in Pingree, North Dakota. I had already spent three full days working the coulees of Benson County to the north, sloshing through the deepest, rankest quarters of those valley meadows without one whisper of success.

Having had no luck finding the stealthy birds up north, here I was in Pingree, where I met up with Ray Greenwood, a wildlife biologist with the nearby Northern Prairie Science Center. As we drove out of town onto the prairie, Ray confirmed what I'd already heard in Missouri—that the bitterns here were nesting in dry, upland fields.

The nests are found by accident in the course of duck-nest surveys, Ray explained. A long chain is dragged slowly between two vehicles, flushing the ducks and, occasionally, a bittern from the nests.

With one wing stretched wide and hissing head held low, a least bittern tenaciously defends his territory.

William Burt photographed rails for the August 1988 and 1991 issues of SMITHSONIAN. *His quest for them is detailed in* Shadowbirds *(Lyons & Burford, 1994).*

On northern prairie, a clutch of four American bittern eggs rests on straw, rather than the usual nest of reeds.

As Ray and I drove along, I told him Mike Callow's story of the ruse played on young biologists, and he smiled. "It's true," Ray said. "It's a ritual prank we pull on college interns, grads and undergrads who've never set foot on the plains before. You're out there checking duck nests, showing your trainee how, and you casually tell him to go check that mallard nest over there; and he's in for a big surprise. It's a source of much amusement among the veteran staff."

After uncounted right and left turns on grid roads so alike that even Ray became confused, we found the spot he was looking for—a most unremarkable pasture, a tangled mix of sweet clover, alfalfa and grasses. Could this dry, scruffy stuff really serve as homeland to a bittern?

I assembled my armamentarium of photographic gear, and we hiked out along a fencerow to an orange flag. "Now you can go on ahead," Ray said. He pointed to a flag 50 yards out: "The nest should be ten feet south of the marker."

Tearing my way across the field—there was no other way in this tangly, knotty salad—I wondered if I too might be the victim of a ruse, like the young biologists. Would a bittern really nest in such a place? From the marker I stepped south for six or seven feet, then stopped. It took a minute's scrutiny, but finally I found her: our eyes met and at once she issued forth a hiss, or should I say a snarl, something you'd expect of a dinosaur, not a bird. (I say "she," for it is the hen that tends the American bittern's eggs.) She was buried so deeply in the grass that pictures were impossible. Ray joined me and held back the vegetation with a stick.

She sat tight, snarling and glaring and puffing herself up to look chesty, large-shouldered, masculine, like a football linebacker. The camera prospects were still poor, so deep down was she, but I fired off a few exposures. Then, at some motion of the stick she could not brook, she jumped up and bustled away into the grasses.

As we drove to the next nest site, Ray explained that the tangly fields the ducks and bitterns use are "CRP" fields, short for Conservation Reserve Program, a federal initiative he strongly advocates. Under CRP, instituted in 1985, the Department of Agriculture leases qualifying privately owned croplands for a ten-year period, with the proviso that they are planted with perennial grasses or, even better, a seed mix of tall wheatgrass, sweet clover and alfalfa. The plantings are a boon to nesting ducks and to other declining prairie birds—including the American bittern. There are many benefits, Ray explained: soil erosion is checked, preserving wetlands and water quality; grain surplus is reduced and prices raised; and farmland is preserved for forage production in emergency years.

When we reached the next marker, the nest was full of baby pterodactyls, it would seem—tall and fierce as they could be, but a little wobbly, not quite convincing, and more than a little comical with their erect electrified hairdos. With make-believe ferocity they hissed and snapped their beaks, but they were earnest guardians of their home and would be convincing monsters soon enough.

The last nest was the one that persists most vividly in memory. Ray and his assistant, Don Pietruszewski, pulled aside the foreground grass, revealing one defiant bittern. She stood her ground, she snarled and glared at each of us in turn with eyes of uncompromising fire. When I finished taking my pictures I stepped back and marveled at the scene before me. Here at the feet of two tall men sat one lone bittern on her eggs, unyielding. It was a powerful tableau, a display of supreme maternal valor.

Driving back to Pingree, Ray and I talked about that defiant bird. I now knew exactly what those young biologists were apt to encounter when they leaned down expecting to count fuzzy ducklings. What do they think of it? What do they do when that creature rears up and snarls? I asked Ray: What do they say?

Ray chuckled a moment, then responded, "Usually, they say they wish they had a camera."

Looking like punk-rock pterodactyls, these chicks will grow to become handsome masters of camouflage.

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A life of genius, retrieved at last

In an exhibition that celebrates her collected works, the singular accomplishments of painter Sofonisba Anguissola are restored to history

In mid-16th-century Italy, at the height of the Renaissance, a household in the northern city of Cremona was a haven of domestic felicity. The spacious palazzo, still standing on the Via Tibaldi, was a dwelling rich in laughter, in a spirit of intellectual inquiry—and in daughters. Amilcare Anguissola, a member of Cremonese minor nobility, and his wife, Bianca, had in fact six daughters and a son. At a time when the pursuits of wellborn young women were rigidly circumscribed—instruction in little more than needlework and music was customary—Amilcare decided to educate his daughters. Each demonstrated astonishing artistic promise.

The result of his decision was extraordinary. The eldest, Sofonisba (c. 1535-1625), became the first woman to achieve fame as a painter during the century of Leonardo and Titian. Her name has largely been lost to history, but a groundbreaking exhibition containing more than 20 of her works should resurrect her renown. "Sofonisba Anguissola: A Renaissance Woman," at the National Museum of Women in the Arts, in Washington, D.C. through June 25, following a European tour, offers a rare glimpse of a fascinating figure.

Around the age of 11, Anguissola began her studies at the studio of Bernardino Campi. Her entrancing portraits soon earned notice among the aristocracy of Mantua and Parma. Michelangelo praised her drawings extravagantly. By her mid-20s she had gained the favor of the king of Spain. In 1559 Philip II called her to Madrid. She remained there for 14 years, serving for some time as art instructor to Queen Isabel and as a court painter, producing images of the royal family that are among the treasures of the Prado (SMITHSONIAN, January 1992).

Anguissola journeyed back to Italy in 1573. Her marriage to the ship-captain son of a Genoese noble family was a happy one. A pension from the king left her in comfortable circumstances. She continued to paint into her 80s, an international celebrity who welcomed artists from across Europe into her studio.

Kathleen Burke

Muzeum Narodowe, Poznan, Poland

Early on in her career, Anguissola had mastered not only formal portraiture but the art of everyday life.

Capturing an intimate moment, *The Chess Game* (1555) portrays sisters Lucia, Europa and Minerva matching wits under a maidservant's eye. The work is one of the 16th century's most important genre paintings.

Museum of Fine Arts, Boston

For an early self-portrait, painted circa 1552, Anguissola cultivated an aspect of austere composure.

City Art Gallery, Southampton, England

Walters Art Gallery, Baltimore

Arresting likeness of a 9-year-old scion of Italian aristocracy, Massimiliano Stampa, helped build her reputation as a portraitist.

Soon after her sister Elena entered a convent in Mantua circa 1551, Anguissola created this haunting image of the young Dominican novice.

Lowe Art Museum, Miami

In *The Holy Family with Saints Anne and John the Baptist*, dating from 1592, Anguissola evinced a mastery of devotional painting.

By Edward Hower

A spirited story of the psychic and the Colonel

Henry Steel Olcott had expected to scoff at Madame Blavatsky's séance, but he stayed on to help found the Theosophical Society

Lawyer and journalist Olcott first met Blavatsky while attempting a scientific study of occultism.

On a warm autumn afternoon in 1874, Henry Steel Olcott, an attorney and popular New York journalist, found himself in Vermont looking for ghosts. On assignment for his newspaper, he planned to investigate one of the séances, or "spook shops," that were then enjoying a surge of popularity across America.

Olcott's credentials as a sleuth were impeccable. After rising to the rank of colonel during the Civil War, he had attracted national attention as the head of a commission that investigated the conspiracy to assassinate President Lincoln. Now 42, with his fashionable mutton-chop whiskers and pince-nez spectacles he was an imposing media figure, and his readers expected a brilliant exposé. They were to be very surprised.

For Colonel Olcott was about to have one of the most dramatic midlife crises in history. Changing from skeptic to true believer, he would become a leading exponent of occult wisdom in countries around the world, and the first American to popularize Eastern religions in the West.

What brought on the dramatic turnabout in his life? Her name was Helena Petrovna Blavatsky, a down-on-her-luck Russian aristocrat and mystic who had also made her way to Chittenden, Vermont, that afternoon. Middle-aged and fat, fond of dressing in frumpish Gypsy-like costumes, she was no siren. Nonetheless, her round face, wiry hair and huge eyes gave her a hypnotic attractiveness. She could converse brilliantly on any subject, and when Olcott met her, he was fascinated.

Inside an old farmhouse, they joined a hushed audience facing a wooden platform. The room darkened. Onto the stage stepped the "materialized spirit" of Honto, a beautiful Indian maiden. She did a dance with scarves, then vanished into the shadows. An Egyptian juggler appeared, offering an Oriental rope trick. A wizened old lady brought messages from the next world in a tiny piping voice.

Madame Blavatsky herself began to call forth spirits from the ether. Among them was her family's former footman, who wore a tall fez and sang folk songs, and her late uncle, a Russian judge wearing lugubrious black robes. Another spirit gave her a military medal that, she told the amazed audience, had been buried with her father many years before. For Olcott, the medal was proof of her genuineness as a medium.

To understand how he could take such theatrical apparitions seriously, I had to look at the history of the religious movements that swept across the country during the past century. Spiritualism, the conviction that the dead could communicate with the living, had many sober-minded adherents then. The belief occurred partly as a reaction against Charles Darwin's theory of evolution, which seemed to deny all traces of a divine origin to human history. Defying "materialism," clergymen and mediums alike brought reassuring messages to their

Even in old age, Helena Petrovna Blavatsky seemed to exude reserves of power and hypnotic intensity.

"The Lamasery," exotic Manhattan quarters shared by Olcott and Blavatsky in 1875, contained tiger and wolf skins, stuffed owls, snakes and lizards, and was regarded as a Victorian temple of Orientalism.

The Colonel, whose joyless marriage was ending and whose career had bogged down in routine, remained smitten with the exotic Madame Blavatsky after they left Vermont. Defying social convention, he set up house with her in an apartment at 47th Street and Eighth Avenue in New York City. To her, he must have seemed a godsend—she had recently been reduced to working in an immigrant sweatshop making artificial flowers. Now she had someone who would not only pay the bills but introduce her to the many influential people he knew. She and the Colonel were probably never involved sexually—her letters report that she had an aversion to physical passion, and he was known to keep mistresses—but their partnership was to last for more than a decade. They spoke of each other as "chums."

The "Lamasery," as journalists soon began to call their apartment, was a joyously eccentric place. A mechanical bird and a golden Buddha perched on the mantelpiece, framed by tall potted palms. Stuffed owls, snakes and lizards peeped out from the overflowing bookcases. The star of this menagerie was a stuffed baboon, wearing spectacles and clamping under its arm

audiences from beyond the grave. Like Colonel Olcott, many people believed that investigations into paranormal activity would eventually reveal ways in which Spiritualist "phenomena" could be explained by natural laws.

Today, in another era of confusing scientific innovations, the New Age movement has revived considerable interest in communication with the spirit world. A scholarly new book about Madame Blavatsky, *The Masters Revealed* by K. Paul Johnson, traces the historical origins of some of the people she claimed to have contacted through telepathy. All sorts of channelers, shamans, gurus and spirit guides are attracting popular attention. The most celebrated modern figure involved, actress Shirley MacLaine (right), became a best-selling author by writing about her past lives. One of MacLaine's former spiritual interests is often satirized in the *Doonesbury* comic strip when a young starlet acts as a channel for a prehistoric character named Hunk-Ra.

But no one today can match Madame Blavatsky's flamboyance or the proselytizing zeal for which Colonel Olcott became famous a century ago.

At 17, on the run from an unhappy marriage in Russia, Helena Petrovna Blavatsky began a life of travel. She supported herself as a lady's companion, journalist, pianist and even a circus bareback rider. She also held séances among society matrons in Europe, Colonel Olcott reported in his columns, and studied magic with a Coptic sorcerer in Cairo. Ever in search of occult knowledge, she had made pilgrimages to India and Tibet, she claimed.

Most prominent aficionado of New Age Spiritualism is Shirley MacLaine.

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a lecture on Darwin's *Origin of Species.*

The place became a salon for truth-seekers who were attracted by the Colonel's enthusiasm and Madame's witty, irreverent conversation. Guests hoped to witness one of her famous "phenomena." Like other contemporary mediums, she could make mysterious rapping sounds echo from under séance tables and cause pictures to appear on slates no visible human hand had touched. Unseen "astral bells" tinkled around the room as she sat mesmerizing her audience with tales of her adventures.

Blavatsky often invited journalists in to chronicle her eccentricities, including her outlandish costumes and a 100-cigarette-a-day smoking habit. She referred to her critics as "gilded humbugs" and "old overboiled pumpkins." Newspapermen, she complained vehemently, "wanted to see my mouth to count my teeth and see whether they were genuine or not. . . . They said I was a heathen . . . an adventuress . . . a felon or a forger, that I had been married seven times, and murdered six of my husbands."

At one gathering, Colonel Olcott suggested creating an organization to study occult "phenomena" and literature. Someone suggested calling it the "Theosophical Society," after a group of third-century Alexandrian scholars. The name was adopted, and in November of 1875 the Colonel was elected the society's first president. Among the early members were Thomas Edison, who had just invented the phonograph, and Gen. Abner Doubleday, who was later credited (inaccurately) with inventing the game of baseball.

A cartoon, circa 1890, pokes fun at occultism, astral planes, messages from beyond the grave and claims of Spiritualism as an alternate religion.

Young law student Mohandas Gandhi was impressed by mystic Blavatsky.

The new society needed ideas to distinguish it from those of other Spiritualist groups. Madame Blavatsky, announcing that she was through with "spooks," began writing a compendium of ancient occult knowledge. She was a voracious scholar who seemed to remember every book she had read since childhood. The Colonel edited her manuscript as she wrote, skillfully packaging her arcane theories for public consumption.

When her book *Isis Unveiled* was published in 1877, it ran to nearly 2,000 pages. Reviews were mixed. The author pasted all of them in her 30-volume scrapbook, which I read at the Theosophical Society's headquarters in Madras, India. "The most remarkable production of this century," said the *New York Herald.* "A large dish of hash," scolded the *Springfield Republican.* Madame Blavatsky fired back with letters commenting on the reviews, cleverly doubling her media exposure. If she were alive today, I'm sure she'd be titillating the public on the *Oprah Winfrey Show.* Her book is still in print, having sold more than a half-million copies since its publication.

In *Isis Unveiled,* Madame Blavatsky laid out the fundamentals of Theosophy. Borrowing from American Spiritualism, contemporary science, European mysticism and an assortment of Eastern religions, she explained our existence as an evolutionary process by which we progress through successive reincarnations toward a perfect understanding of the Absolute. We are governed by the laws of karma, which reward good deeds we have done in earlier lives. Though it leaned heavily on Hinduism and Buddhism, Theosophy, as she explained it, encouraged an appreciation of all the world's faiths and embraced the brotherhood of all men.

The author claimed that most of her book had been dictated to her by various "Masters," extraordinary men,

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In 1891 Olcott, by then a revered figure in religious circles in India, Sri Lanka and the Far East, visited with Buddhist priests in Japan.

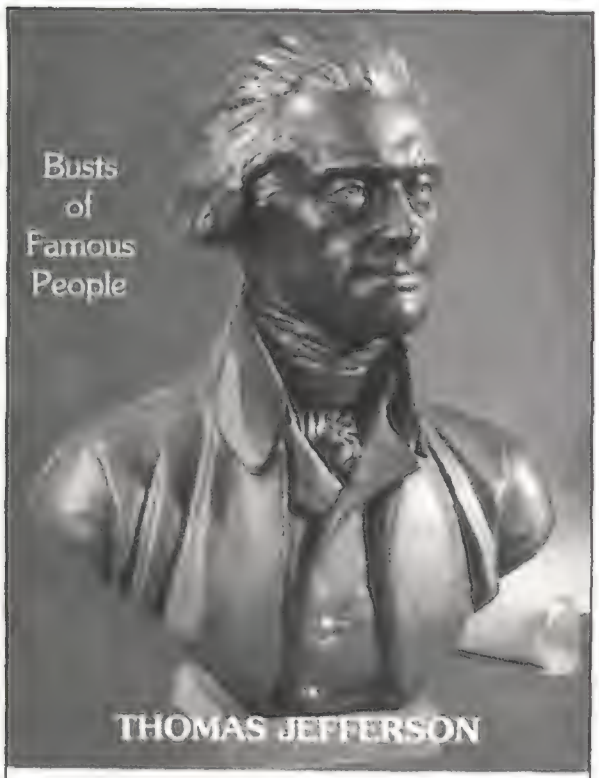
some of them long dead, who for centuries had been guarding secret knowledge in Egypt, India and Tibet. They communicated with her telepathically, she said, using astral currents. They also wrote letters, some of which dropped from the ether into Colonel Olcott's lap as he sat working across from her at their desk. Needless to say, non-Theosophical historians cast considerable doubt upon the telepathic origin of these letters. But the Colonel duly reported their contents with great excitement.

Rival journalists had been making fun of his declarations for some time. The Theosophical Society's membership had dwindled since an incident that had occurred the previous year. A Bavarian aristocrat named Baron De Palm had promised to bequeath the organization his entire fortune, consisting, he said, of a silver mine in Colorado and some castles in Switzerland. He asked only that Colonel Olcott make sure that he was cremated at his death. Cremation was unknown in America at the time. When the baron passed away and Colonel Olcott announced the body was to be burned, journalists had a field day. After the ceremony, the *New York Daily Inquirer*'s headline announced: "Broiled Baron: De Palm Decently Done." Perhaps predictably, the deed to the Bavarian's silver mine proved worthless; his whole estate did not even cover the cost of the funeral.

Colonel Olcott devised a new plan to increase membership: he would merge the society with the Arya Samaj, a large Hindu revivalist organization in India. The two groups, he thought, had a common goal: the awakening of interest in ancient religious wisdom. Madame Blavatsky, who was tiring of New York, proposed moving the society's headquarters—and its two founders—to India. At first the Colonel balked; he did not want to give up his comfortable life. But the prospect of adventure convinced him. Madame Blavatsky took on American citizenship so that she could enjoy the protection of U.S. consulates in India.

The contents of the Lamasery were auctioned off. Soon the apartment, once so splendidly exotic, was bare.

Twice a Fulbright lecturer in India, the author researched this article in Madras and London. He is currently at work on a novel, his third, about Madame Blavatsky and her circle.



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The few remaining Theosophists sat on packing crates to drink tea together one last time. Edison made a recording of everyone's voice—including a few disconsolate meows from the society's cat. On December 17, 1878, Colonel Olcott and Madame Blavatsky sailed for India.

Swami Dayananda Saraswati, the leader of the Arya Samaj, welcomed the two when they reached Bombay. Curious pundits and priests of every Asian faith arrived in droves to meet them. A pleasant compound of tile-roofed houses in the hills above the city became the Theosophical Society's headquarters.

Colonel Olcott soon became a popular lecturer all over the subcontinent. Never before had a Westerner so ardently espoused Eastern religion or so vehemently criticized the influence of British colonialism. Maharajas sent processions of elephants to meet him and Madame Blavatsky, showering them with gifts. Wherever he stopped, the Colonel founded branches of the Theosophical Society. One Indian paper reported that Colonel Olcott had "a Hindu heart and a Saxon energy." Another described Madame Blavatsky as "a woman of extraordinary powers . . . whose life is full of romance and hair-breadth escapes on land and sea and from shipwreck, poison, sword, fire, wild beasts and pestilence." She must have given quite an interview!

Despite their anticolonial sentiments, the Theosophists found a friend in A. P. Sinnett, the editor of the most influential British newspaper in India, the *Pioneer*. Sinnett and his wife had long been keen believers in Spiritualism. They now made Madame Blavatsky a celebrity guest at séances given by the leaders of Anglo-Indian society. Tongues sometimes clicked in disapproval of Madame's bohemian contempt for conventional decorum, which she dismissed as "flapdoodle." But everyone loved the equivocal miracles she produced.

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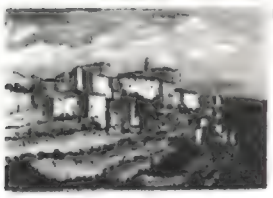

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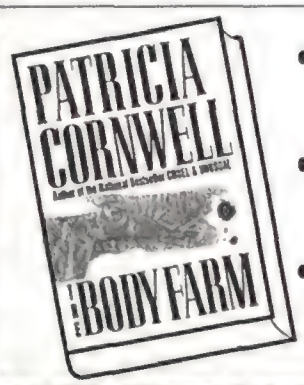

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people's names seemingly appeared from nowhere. Astral bells tinkled. Sinnett began to receive letters from the Masters. On one occasion, the wife of A. O. Hume, a high-ranking civil servant, expressed a wish to reclaim a brooch she had lost years before. Madame Blavatsky said it had been "materialized" outside in a nearby flower bed. The guests rushed out, dug as directed and were amazed to find the treasure. At another gathering, a visiting European professor challenged Madame Blavatsky by declaring that no one, not even she, could produce a miracle the way the yogis of the Shastras (holy books) had done in ancient times.

"Oh, they say no one can do it now? Well, I'll show them!" she replied. "If the modern Hindus were less sycophantic to their Western masters, they would not have to get an old hippopotamus of a woman to prove the truth of the Shastras." She made a sweeping gesture in the air, and a shower of roses fell onto the heads of the startled guests. Happenings like these caused hot public debate. Believing that sensational press coverage of her doings distracted from the serious mission of the society, Colonel Olcott

One Blavatsky source of occult news was Mahatma (Great Soul) Morya.

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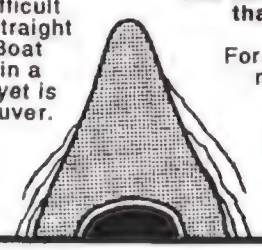

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Theosophical Society in Madras includes a large library of religious books; it's decorated with images of Jesus, Zoroaster, Mohammed, Buddha, Krishna.

began leaving Madame Blavatsky behind during some of his extended lecture tours.

But his greatest personal triumph came in Ceylon (now Sri Lanka) in 1880, when he and Madame Blavatsky took Buddhist vows in a public ceremony. As a Theosophist, he considered the faith part of "one great world religion" and vigorously defended it against attacks from British missionaries who had been trying to Christianize the island.

Olcott visited Ceylon 31 times in the next 27 years. During one stay, he wrote a Buddhist catechism still in use and designed a multicolored Buddhist flag, which can be seen flying over temples around the world today. The Crown Colony's Buddhist priests appointed him to represent them in London. There he successfully petitioned for various changes in policy, including the legalization of religious schools and the celebration of the Buddha's birthday as a national holiday in Ceylon.

Steadily defying the colonial authorities, he set about founding Buddhist schools—well over a hundred, by the end of the century. He spoke to enthusiastic audiences in temples and town halls, at coconut plantations and village crossroads, always urging his listeners to take pride in their cultural heritage. Travel was exhilarating but arduous, he reported in his journal: "when sleep is broken by the ear-splitting sounds of the jungle insect world, the horrid yelp of the jackal pack, the distant noise of wild elephants pushing through the cane groves. . . ."

On another Ceylon visit, he was asked to cure a man who appeared to be suffering from paralysis. Long a believer in magnetic healing, the Colonel made passes over the man's body with his hands, transferring—he believed—his own revitalizing magnetic energy into the afflicted areas. The patient immediately scrambled to his feet and soon the Colonel's services were much in demand. During the next several months, he "treated" hundreds of Ceylonese afflicted with epilepsy, dysentery, even deafness and blindness. To satisfy the clamoring villagers, he gave away thousands of bottles of "magnetized" water.

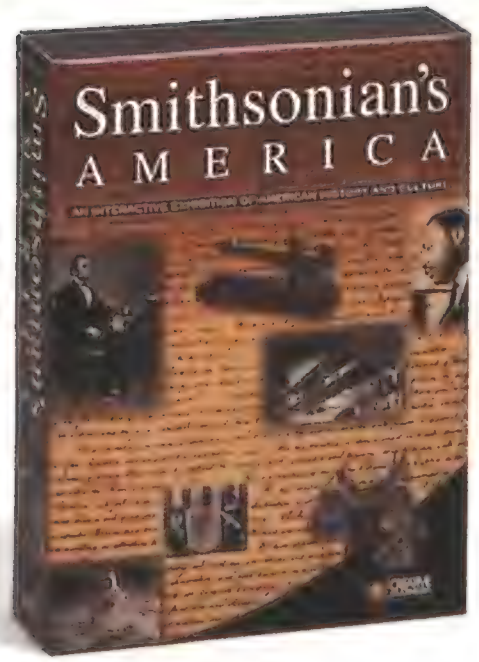
Abruptly, the society ordered him to stop such cures. His vital energy, they said, was being so depleted that he might no longer be able to carry on his important organizing work. Fellow Theosophists might also have been worried that the society's leading emissary was turning his mission into an American-style medicine show.

Colonel Olcott's picture has twice appeared on Sri Lankan postage stamps. People there consider him the father of the Buddhist Revival Movement and an important figure in the island's struggle for independence.

When I visited the headquarters of the present-day Theosophical Society in Colombo, Sri Lanka's capital, I asked the officers if they believed in his reputed healing powers. The organization's president, a former Sri Lankan ambassador to Burma, was surprised at such a question. Surely I was aware that, in Asia, there have always been extraordinary men with highly developed mental powers that allowed them to cure the sick. I apologized for my ignorance.

When the Colonel got back to Bombay in 1880 he found all sorts of trouble brewing. The society's housekeeper, a woman named Emma Coulomb, was feuding publicly with two British associates who had journeyed with the Colonel and Madame from New York two years before. Olcott and Madame Blavatsky decided to back Coulomb—a decision they were later to regret. Then, in an unfortunate coincidence, Swami Dayananda, head of the Arya

Krishnamurti, at left, seemed half-witted to many but was also considered a figure of the reincarnate Buddha; he'd been educated by Theosophists.



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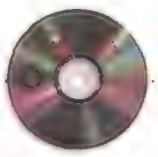

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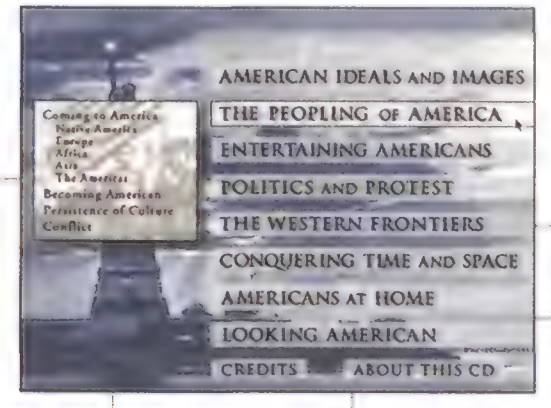

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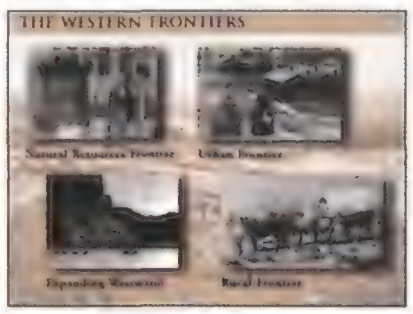

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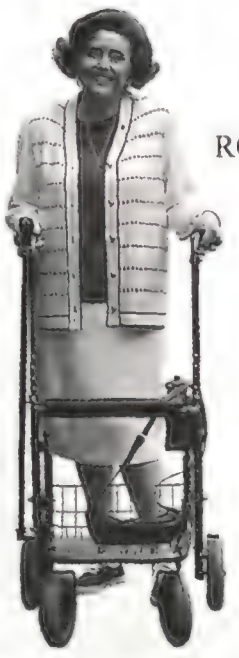

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Samaj, broke off relations with the Theosophists. His organization hoped to unify India under the banner of Hindu revivalism and denounced the society's embrace of all religions. At one point, Samajists distributed leaflets in Bombay attacking Olcott and Blavatsky as untrustworthy foreigners interfering in Indian affairs.

When A. P. Sinnett published a book of letters he said he had received from Madame Blavatsky's Masters, a clergyman confronted Madame with evidence that one letter was plagiarized from a sermon of his that had been published in an American Spiritualist magazine. Anglo-Indian journalists rushed to satirize Madame's astral communications system.

Theosophical headquarters were moved to Madras at the end of 1882, and for a time public controversy died down. The Colonel took up the lecture tours again. While in London in 1884 he learned that the British Society for Psychical Research, an organization dedicated to the study of paranormal phenomena, wanted to investigate the Theosophical Society's activities. The group included philosopher Henry Sidgwick, as well as politician Arthur Balfour (who would become Britain's prime minister in 1902) and physicist Lord Rayleigh.

Their attention had been caught by a sensational article in the *Times of London*. Emma Coulomb, the housekeeper whom Madame Blavatsky had earlier defended, claimed to possess letters from her employer instructing her to fake many of the mysterious happenings that had attracted so much controversy. Coulomb published these letters—which the Theosophists insist to this day were forgeries—in the magazine of Madras Christian College. For years the society had sparred with the missionaries. Now the men of the cloth, it appeared, were about to get their revenge.

In one letter, Madame Blavatsky reportedly instructed Coulomb to display a bearded, life-size doll in the moonlight so that it could be taken for

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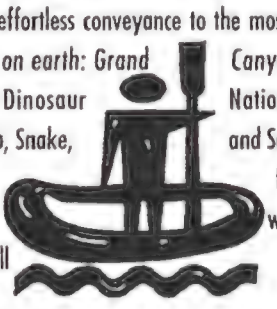

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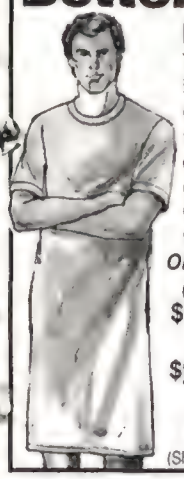

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Shortly after arriving in Bombay, Olcott posed in simple Indian garb.

a Master paying a nocturnal visit to prospective members. Another letter ordered the housekeeper to put faked notes from a Master in the Madras headquarters' hallowed "shrine." This was a cabinet equipped with hidden sliding panels, allowing access to it from the adjoining room—Madame Blavatsky's bedroom, in fact—through a concealed hole in a closet wall.

While Colonel Olcott and Madame Blavatsky were in Europe, the president of the Society for Psychical Research (SPR), Richard Hodgson, left for Madras to have a look at the cabinet. But when he got there, British and American Theosophists told him the shrine had vanished. A few days afterward, he discovered that they had chopped it up and burned the pieces.

The Colonel rushed back to Madras

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with Madame Blavatsky. He insisted that the cabinet had been destroyed to save her from unwarranted persecution, and that she had never ordered Emma Coulomb's husband to build its suspicious panels, as the housekeeper claimed. Instead, he asserted, the man had constructed the panels *after* Madame had left for Europe, knowing that the SPR would be investigating the cabinet. The Coulombs, he claimed, were out to ruin Madame Blavatsky's reputation in retaliation for wrongs (low wages and public reprimands) the couple said she was responsible for.

Hodgson visited the Coulombs' quarters in Madras. There, a mysterious letter fell into his lap, just as letters had fallen onto Colonel Olcott and other Theosophists. Emma Coulomb demonstrated how she had caused the letter to drop—by releasing it from a nearly invisible thread attached to a concealed hook in the ceiling. It occurred to Hodgson that a shower of roses might have once been released in a similar manner.

The SPR gathered evidence with the meticulousness of a police investigation unit. A handwriting expert testified that the letters produced by Coulomb had been penned by Madame Blavatsky. Hodgson's committee published its report, which came to more than 350 pages.

Colonel Olcott, the report stated, was "innocent of any willful deception" but guilty of "extraordinary credulity and inaccuracy of observation and inference." Madame Blavatsky was judged guilty of deceiving many people with bogus messages and faked appearances of Masters. The report concluded: "We regard Madame Blavatsky as neither a mouthpiece of hidden seers, nor as a mere vulgar adventuress; we think that she has achieved title to permanent remembrance as one of the most accomplished, ingenious and interesting impostors in history."

Was Madame Blavatsky an impostor? Theosophists still passionately deny it.

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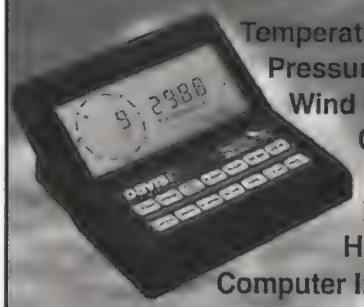

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During my research I found nothing fraudulent about the intellectual scope of her books or the intensity of her devotion to the esoteric ideas they contained. I can understand how people who believe in psychic intuition claim her as one of its greatest practitioners. But the SPR's case against her seems convincing. Clearly she did use deceitful tricks to dazzle people and encourage their faith in the occult world.

Colonel Olcott understood how important she was for the winning of converts, but I believe that he eventually came to doubt the authenticity of her "phenomena" and even of the Masters. He once argued vehemently with Madame Blavatsky about a supposed Master's letter that, she insisted, ordered him not to make a trip to Ceylon. After defying the order, he reported in his journal, "I did not love or prize her less as a friend or as a teacher, but the idea of her infallibility . . . was gone forever." Whatever he thought,

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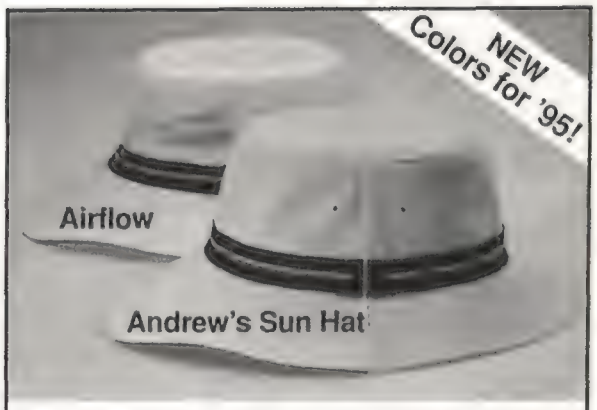

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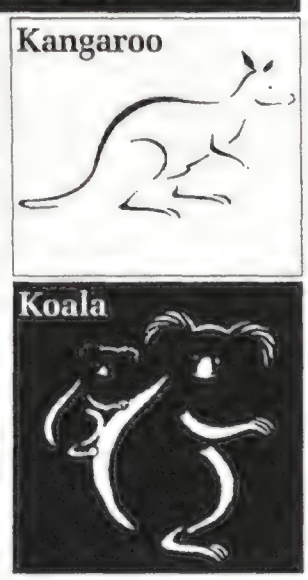

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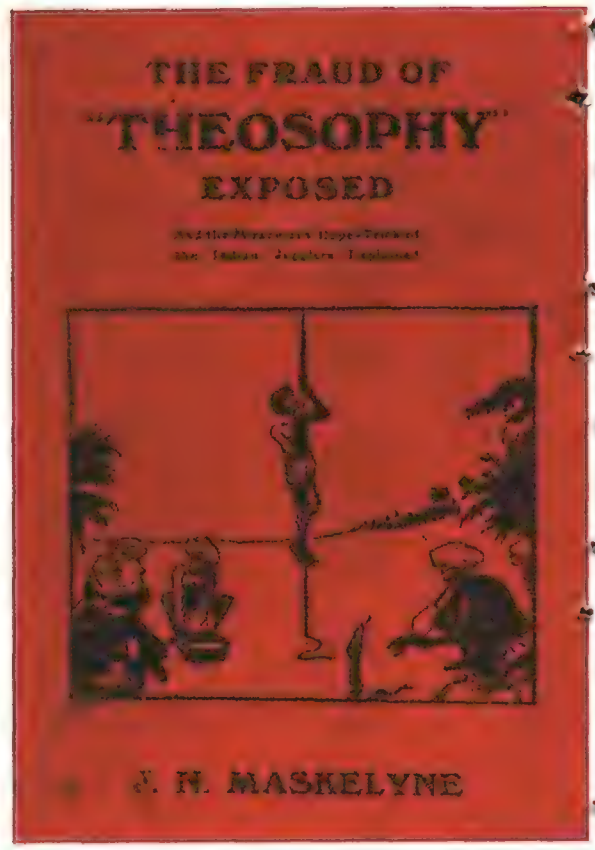

A 1912 attack on Theosophy derided the rope trick—and snake charmers.

he could not openly criticize her during the SPR investigation. To do so would have damaged his own reputation for integrity and further risked the good name of the movement to which he had dedicated his life.

The investigation nearly destroyed the Theosophical Society. Madame Blavatsky, who usually deflected criticism with her famous wit, insisted on suing for slander. Colonel Olcott, ordinarily a jovial and easygoing administrator, refused to back her lawsuit, fearing even more public embarrassment for the society. Accusing him of treachery, she retreated to her quarters in a rage and announced that she was on her deathbed.

She was, in fact, suffering from a serious liver ailment and nervous exhaustion. Colonel Olcott arranged for her passage on the first ship bound for Europe. On March 31, 1885, too weak to walk, she was hoisted in an invalid chair onto a steamer waiting in the Madras harbor. She was never to return to India. Except for one brief, uneasy meeting in London, she would never see Colonel Olcott again.

But to the astonishment of her critics, Madame Blavatsky's career as a

public figure was by no means finished. Miraculously recovering her health, she went on to write *The Secret Doctrine,* another enormous chronicle of occultism that caused as great a sensation as *Isis Unveiled.* Taking up residence in England, she again began attracting many of the leading intellectuals of her day. A frequent guest in her London salon was Irish poet William Butler Yeats. Annie Besant, one of the future founders of the Indian National Congress, converted to Theosophy. A young Indian law student named Mohandas K. Gandhi attended the society's meetings and was inspired by the discussions of Indian religions he heard there.

In her 60th year, Madame Blavatsky died in London during the influenza epidemic of 1891. Colonel Olcott, lecturing in Australia at the time, was not among the mourners at her funeral. He always praised her work but had learned to move on without her.

Ever since her departure from India, he had been a driven man, traveling the world and planting branches of the Theosophical Society wherever he went. He started free schools for children of the Untouchable caste in Madras. He founded a library there where scholars from many countries could study ancient religious texts. Today, the society's Indian headquarters, a beautiful palm-fringed estate, attracts thousands of visitors a year. The organization's profile is much lower than during the times when its leaders were making headlines, but it has steadily grown, with about 33,000 members and branches in more than 50 countries.

Colonel Olcott made his last trip to Madras in 1907, to give his annual presidential address. Too ill to deliver it himself, he was carried downstairs from his room to hear it read. A few days later, on February 17, he died of heart failure. He was 75 years old. He had often revisited the United States during his lecture tours, but he never returned there to settle. India was—and is—his final home.

Madame Blavatsky and Colonel Olcott had a brief meeting and sat for a final portrait in London in 1888. It was the last time they saw each other after a Society for Psychical Research investigation had accused her of being "one of the most interesting impostors in history." Olcott, they held, showed "extraordinary credulity."

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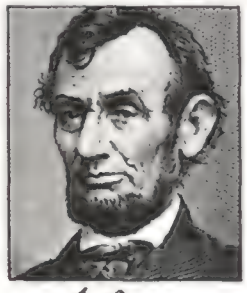

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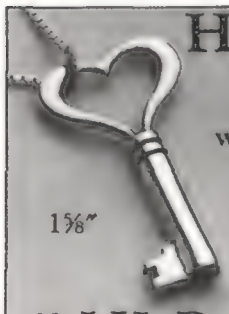

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Pandas are the superstars of endangered species. Charming, gentle and vulnerable, these shambling, bamboo-crunching beasts from the mountains of western China are so popular a zoo attraction that a single animal can mean millions of visitor dollars, and the Chinese government rents out pandas short-term for six-figure fees. But as George Schaller makes clear in this sensitive and illuminating book, all the attention and popularity do nothing to help panda conservation at a time when perhaps 1,000 to 1,500 giant pandas remain. When breeding animals are caged they don't always do what comes naturally in the wild, and as a result the population declines still further.

Schaller is the right biologist-writer to pair with pandas. The author of the acclaimed *The Year of the Gorilla* and other fine nature books brings a combination of scientific expertise, cultural humility and writing skill to the task of documenting a several-years-long campaign during which he and others studied pandas in China in order to find ways to save them—with only indifferent success. In the end he retained a flicker of hope but not much more. China has established more nature reserves in recent years than any other country in the world, but the reserves are inadequately policed, poaching remains a major threat, and habitat destruction for lumber and farmland con-

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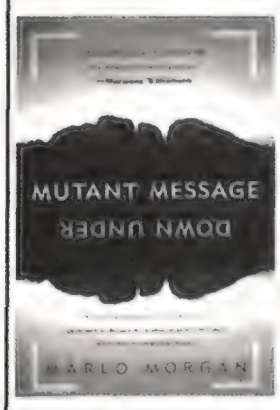

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tinues to squeeze the panda's range. When Schaller left the panda project in the mid-1980s he still was not sure whether China's government and scientific leaders were fully committed to saving the panda.

His book is a nicely crafted blend of wildlife observation and political-cultural analysis. The Chinese, traditionally resistant to advice from foreigners, at first almost seemed intent on sabotaging Schaller's World Wildlife Fund-sponsored project: they barred him from access to important data, insisted that he be escorted on tracking hikes and sloughed off much of the support work. Chinese researchers who developed an interest in the animals were sometimes arbitrarily shuttled elsewhere. "Both the Chinese and the pandas," he writes, "embody a blend of deceptive stoicism and warmth."

Schaller doggedly sloshed through the snow-blanketed highlands and endured freezing nights at observation posts, collected droppings with an ardor only a scientist can appreciate, trapped and radio-collared pandas, and occasionally watched them feeding, at play or engaged in the graver business of sex and parenting. On one trek he got a glimpse of the formidable animal behind the cuddly surface. He and an assistant got too close to a mother panda and her young:

"Suddenly we see bamboo sway thirty feet ahead, and Zhen [the panda] appears by a fallen tree. She turns to leave, abruptly changes her mind, and, giving two loud roars and several snorts, trots toward us. There are situations when it is unwise to test whether an animal is just bluffing—and this is such a case. I crash through the bamboo to a nearby tree, a small one six inches in diameter, and scramble up. Not until I am sitting on a low branch eight feet above ground do I look back. . . . Zhen hesitates a moment, first starting to follow Hu Jinchu, then veering toward my tree. After she passes beneath my feet she halts, huffing and snorting, and listens for one long minute, [then] turns toward the den tree one hundred and twenty feet downhill."

Pandas are more susceptible to extinction than many other animals because of their all-bamboo diet. Lacking the adaptability of bears, coyotes and other scavengers, they are tied inexorably to the steadily shrinking bamboo forest. Natural bamboo die-offs, which occur periodically, can decimate a local

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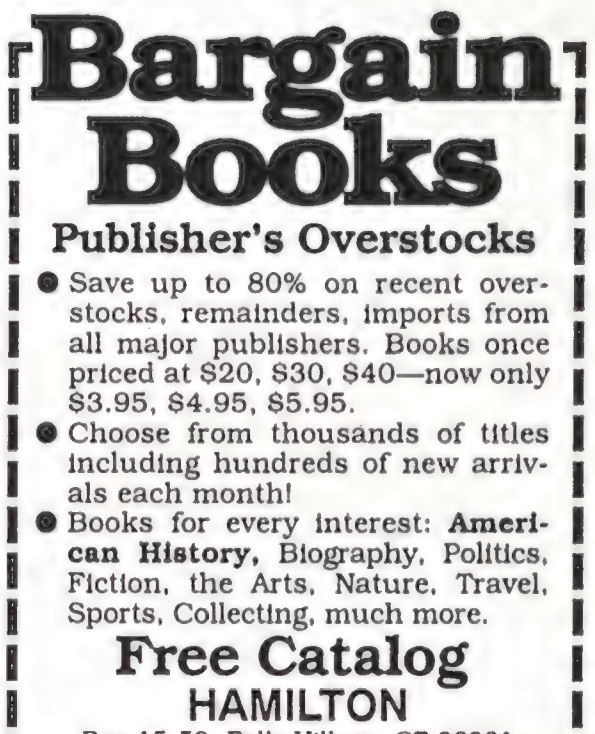
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population. A newborn panda is surprisingly tiny, weighing only three or four ounces (an adult weighs about 200 pounds), and needs intense parenting for several months. With a relatively low metabolism, pandas spend most of their time foraging and resting, ranging less than a mile a day, putting away up to 40 pounds of bamboo shoots or stems daily.

Poachers who illegally hunt musk deer sometimes kill a panda in their snares, a preventable disaster that befell one of Schaller's collared animals. "We stood in a semicircle before her," he writes of another snared panda, "looking down at her still form as if in prayer. It was a silence far louder than the usual chatter. Finally, as if in slow motion, we took pliers to unwind the snare from her neck and turned her over. There was milk in her swollen nipples. She had died at the height of life's success; somewhere in the forest was an orphaned young about seven months old, still in need of milk, but with luck it might survive on bamboo leaves. We tied her to a pole, and two men carried her down the mountain, one of her arms bobbing in rhythm to the steps." It is clear from this passage, among others, that this is a scientist who knows how to use the language.

Schaller finds wisps of hope in the fact that the poacher in this case was eventually sentenced to two years in jail (doubtless a stiffer penalty than a similar conviction would have brought here). The abundance of reserves and a growing dedication among Chinese biologists also offer encouragement, but Schaller concludes that the panda will never be truly secure and may well be doomed. "It is the difficult fate of this generation to finally grasp the magnitude of all the offenses against the panda and other forms of life," he writes, offenses that have culminated in "nothing less than a spiritual divestment, a renunciation of past and future." *The Last Panda* is a sad chronicle of our failure, so far, to stem the decline of the animal that may be the most beloved on the planet.

Dale Peterson's *Chimpanzee Travels* is an altogether different kind of wildlife book. An English professor in Massachusetts who has traveled widely in Africa and learned enough about primates to call himself an "amateur primatologist" (which may be stretching it), Peterson is spontaneous and whimsical where Schaller is organized and

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methodical, idiosyncratic and solitary where Schaller is a member of the team. They share a willingness to put up with whatever it takes to learn about their critter of choice, in Peterson's case the chimpanzee.

Peterson never quite lets us in on the purpose of his book, except to say that he wants to find out what he can about the status of chimps in Africa. The result is more of a travel book than a nature book, recounting his sometimes comical, sometimes painful odyssey as he wings it with backpack and notebook from one country to another, often arriving with nothing to go on but a name he heard from someone he met at the last stop. He seems a good-natured sort, Everyman adrift in a vast continent, waving cash in the air as he heaves with the mob at a railroad ticket window, uncomplainingly idling beneath a tree while a mischievous chimp rains urine on him, discovering with glee how chimps use a rock anvil and another rock as a hammer to crack nuts. He turns up wherever the chimps are, including Jane Goodall's research outpost in Gombe, Tanzania (where we get only the sketchiest glimpse of Goodall). Why focus on chimps? "Because . . . they're people," he quotes an anthropologist by way of explanation.

Peterson's artlessness makes his book's revelations seem inadvertent, but I'm willing to give him the benefit of the doubt. As with pandas, poaching is a constant threat to chimps; illegal hunting and wildlife smuggling are depicted in this account as being major African industries.

The book eventually sorts itself out and becomes a travel diary, with one vignette galloping after another, some interesting and some otherwise, while the diarist engages in a nonstop quest for chimps, excitement, Cokes, good water and a warm bed. In one splendid scene Peterson and a friend watch two male chimps have sex with a female in a Ugandan forest. Just as the action concludes, three pink-cheeked British birdwatchers appear. Peterson's friend tells them that they just missed the sex. "Yes," one replies soberly, "we thought we'd wait until it was over."

The book's best moments are the surprise encounters with the always fascinating chimps in the wild: "They started coming down to the ground, climbing down, riding down thin and bending treetops, jumping down—chasing each

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other down. We heard screams and grunts and chorusing cries, the thump thump thump of feet running across branches, a surfy bursting through leaves. . . . the larger one . . . stood slowly, began swaying and vocalizing with noisy inhale-exhalations, and suddenly burst through some vegetation on the ground and flew into an ancient, half-decayed tree trunk that exploded. . . ."

More moments like that might have lifted Peterson's rambles to a higher plane in his interesting genre of travel-cum-wildlife writing, but unfortunately we don't get many more. My suspicion is that the trouble lurks in a couple of lines of author-to-author dialogue near the end of the book: "I was drifting down there in Pointe-Noire, troubled, fragmented and frustrated, while the money just continued to drain out of my pockets. What was I looking for? I had no idea."

Donald Dale Jackson is a writer living in rural Connecticut.

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Doc is an oddly affectionate memoir, "artless" in the best sense of the word. As books go, it is a bit of a hodgepodge: part episodic adventures of a small-town doctor (Marcus Welby meets Grizzly Adams), part exploration of the practice of medicine and passionate rebuttal of the current system, part paean to a simpler era that has vanished.

Doc Losee is a man who freely admits how little he knew when he began doctoring. When snow closed the road out of Ennis, he responded to the urgent call from an expectant mother by fran-

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tically reading *Williams Obstetrics*. "You can say that a rural general practice of medicine starts with the first home delivery," he dryly notes.

In time Losee came to a deep understanding of the limits of his experience. "My feelings of inadequacy were in no small part due to my mistaken belief that a doctor was supposed to *cure* people," he writes. "Gradually I came to understand that there are no *cures*, that healing is the in-built mechanism of the body, and without its genetic, immune, inflammatory, and adaption processes, we are goners early in the game."

In 1957 Losee left Ennis for two years to learn the art of orthopedic surgery at the Royal Victoria Hospital in Montreal. This was his true calling. Upon returning to his old routine, he notes, "every time a patient with an orthopedic problem presented, general practice came to an immediate grinding halt. . . ." Losee's deep fascination with bones and joints led to a pioneering work in the early 1970s on the repair of "trick knees"—knees that suddenly give way while slightly flexed. His innovative surgical technique is still in use today.

Now in his mid-70s and retired from the operating room, Losee still consults weekly with patients. The hospital in Ennis, which opened its doors the year after he arrived (the nursery for newborns was an upholstered kitchen drawer warmed by a mechanic's drop light), has expanded again and again. Doc Losee has repaired the trick knees of patients whose births he attended. He has seen enough of medicine to report that the first commandment of the clinician is to listen; and he has seen enough of the world to admonish the rest of us "to revere life with passion."

"I'm so damned glad I was a doctor, that I learned so much about life and creativity, and so little of killing and destruction," he writes. "I am so damned glad that Olive and I were taught to love people, and that we did love people." This love is evident on every page of *Doc*. What's missing, however, is a full portrait of the man behind the surgical mask. I found myself wondering about Losee's deep urge to go West and the effect that his fierce commitment to medicine had on his family. I also found myself wondering how the town of Ennis gets along without him.

Karl Ackerman's novel *The Patron Saint of Unmarried Women* will appear in paper from St. Martin's this month.

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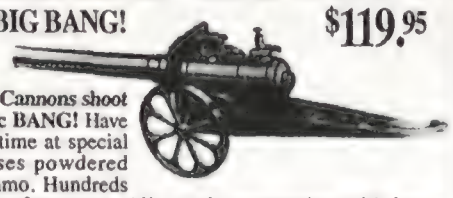
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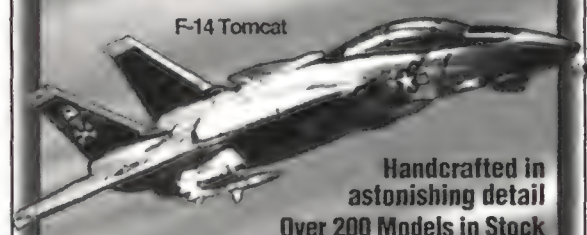

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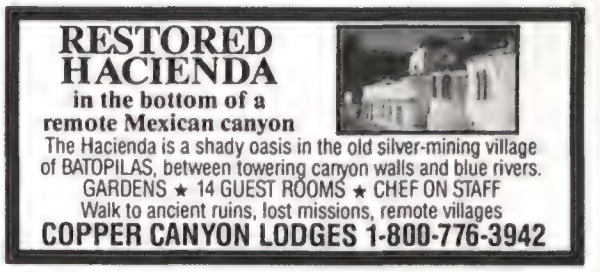
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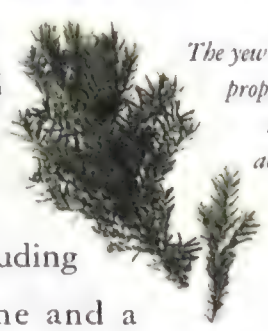

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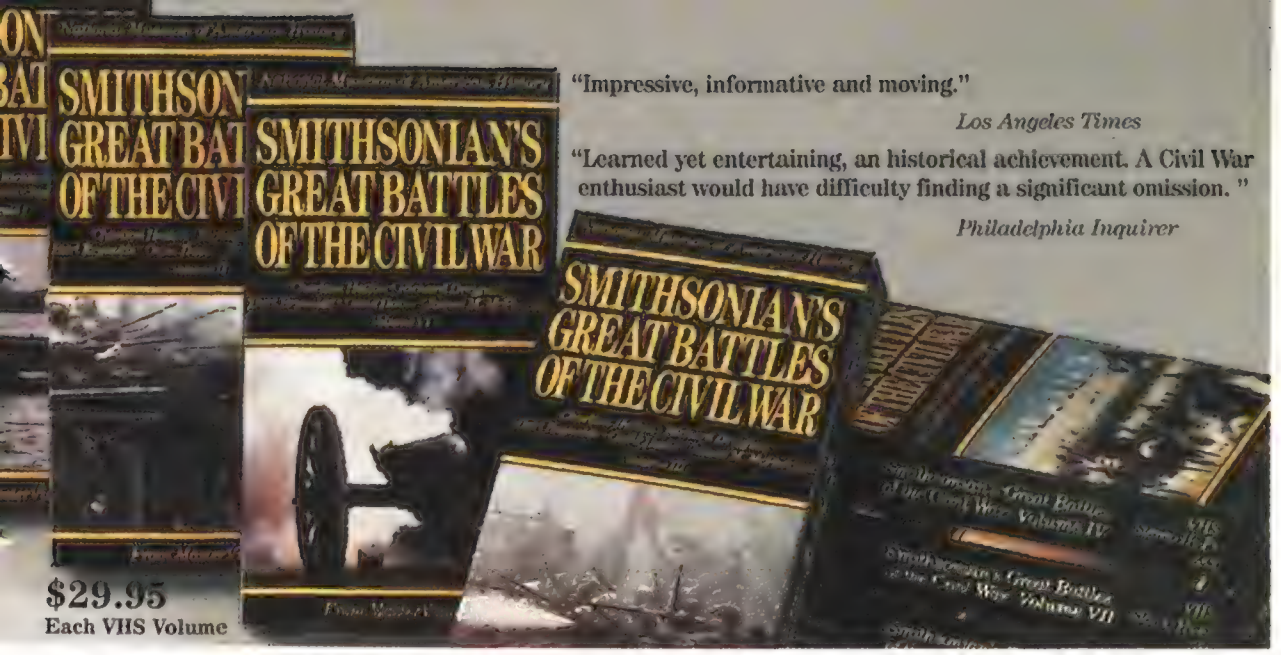
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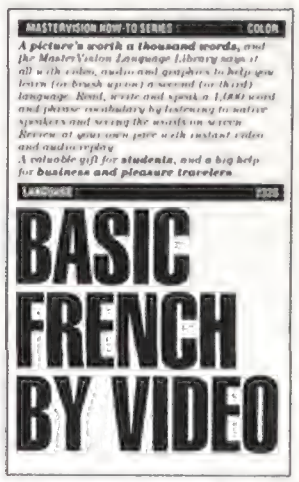
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By Gerald Dumas

When youngsters say things that crack you up, write them down

Back in the late 1950s the TV personality Art Linkletter published a collection of amusing utterances from the mouths of children. He called it *Kids Say the Darndest Things.* The book was hugely popular, and no wonder. Linkletter was mining a rich vein—and an inexhaustible one. I've often wondered why more parents don't bother to write down the sayings of their own youngsters the way my wife and I did.

When our three sons were little, I kept a diary. Along with luncheon appointments and tennis match scores and opinions of books and movies, I began more and more to fill its pages with snippets from the boys' conversations. I don't mean "cute sayings" from when they were learning how to talk. I mean serious (to them) dialogues, candid observations and some highly original thinking. I still smile when I read these pages today.

Let me share a few of my favorite entries with you:

At bedtime I sat on the edge of Davey's bed and questioned the boys about what they wanted to be when they grew up.

"What do you want to be, Davey," I asked, "a ballplayer?"

"No," said Davey. "An artist."

"How about you?" I said, turning to Tim. "What do you want to be?"

"Winston Churchill," came the grave reply.

Early one evening Tim was asked, "How much is one and one?"

Tim, who showed early signs of becoming a negotiator, replied: "How about three?"

David: I'm going to eat my grapes.
Tim: They're not *your* grapes till you eat them. Not yet, not yet, not yet, not yet, not yet, not yet, not yet. . . . *Now* they're yours.

"You have to play inside today, Tim."

"No, I want to play outside."

"Why don't you want to play inside?"

"It's getting too late inside."

At a restaurant an elderly woman, good-looking and well dressed, sat next to us. She chatted pleasantly with Davey, who sat nearest her. Finally he gave her a long, unblinking look and said:

"How old are you?"

"Well, sonny," she said smiling, "can you count up to 70?"

Davey scrutinized her. "I can count up to 100."

John, age 7, was home from school and we were having cookies and milk at the kitchen table.

"Well, John," I said, "what did you learn in school today?"

"I learned to say 'road' in Spanish."

"How does that go, John?"

John took a bite of cookie and said "*el camel.*"

"I'm almost sure that's not how it goes, John."

"In that case I didn't learn anything."

I informed John that it was time for him to learn how to work.

"Work?" said John. "What's that?"

"Work is like cutting grass and raking leaves. I'd like you to rake leaves."

"How long do I have to rake?"

I looked at my watch. It was 10:30 on a beautiful autumn morning.

"Until lunchtime," I said.

He agreed and went to get a rake. Ten minutes later I walked into the kitchen, where he sat eating a peanut butter sandwich.

"What are you doing?"

"Having lunch," he said.

A few years later on another Saturday morning, John was complaining that all his friends were out of town, there was nothing good on TV and he had nothing to do.

"Read a book," I said to him. "We have a thousand books in the house. Read one of *my* books. I wrote *Rabbits Rafferty* for boys and girls just your age. I happen to know that you only read three pages and put it down. *An Afternoon in Waterloo Park* is all about your own father's childhood, and you only read one page of that and never picked it up again."

He stared at me for a moment. "Doesn't that tell you something?"

Tim: I wonder what would happen if you spilled borscht on a Stradivarius? . . . Probably wipe it off and not tell the guy.

Dave: Dad, Tim says space stops after you go real far, but it really keeps going forever, doesn't it?
Tim: It stops at Heaven.
Dave: Tim, we don't know where Heaven is. It doesn't have to be up. It could be sideways, or here on Earth in someplace we don't know about, or even down in the ground.
Tim: Heaven couldn't be down in the ground.
Dave: Oh yes it could!
Tim: Then why do angels have wings?

So there you have a few examples of the kind of conversation you don't get at your weekly Chamber of Commerce luncheons, and reminders of why we should all hang around children more often. Two decades ago the essayist E. B. White wrote to me after seeing a drawing John had done: "Children are the best artists—they are free of inhibitions and can go ahead smoothly and easily and with no regrets." They talk like that, too, and when yours do, take the time to write it all down. Someday you'll be glad you did.

Rarely has sitting down been so exhilarating.

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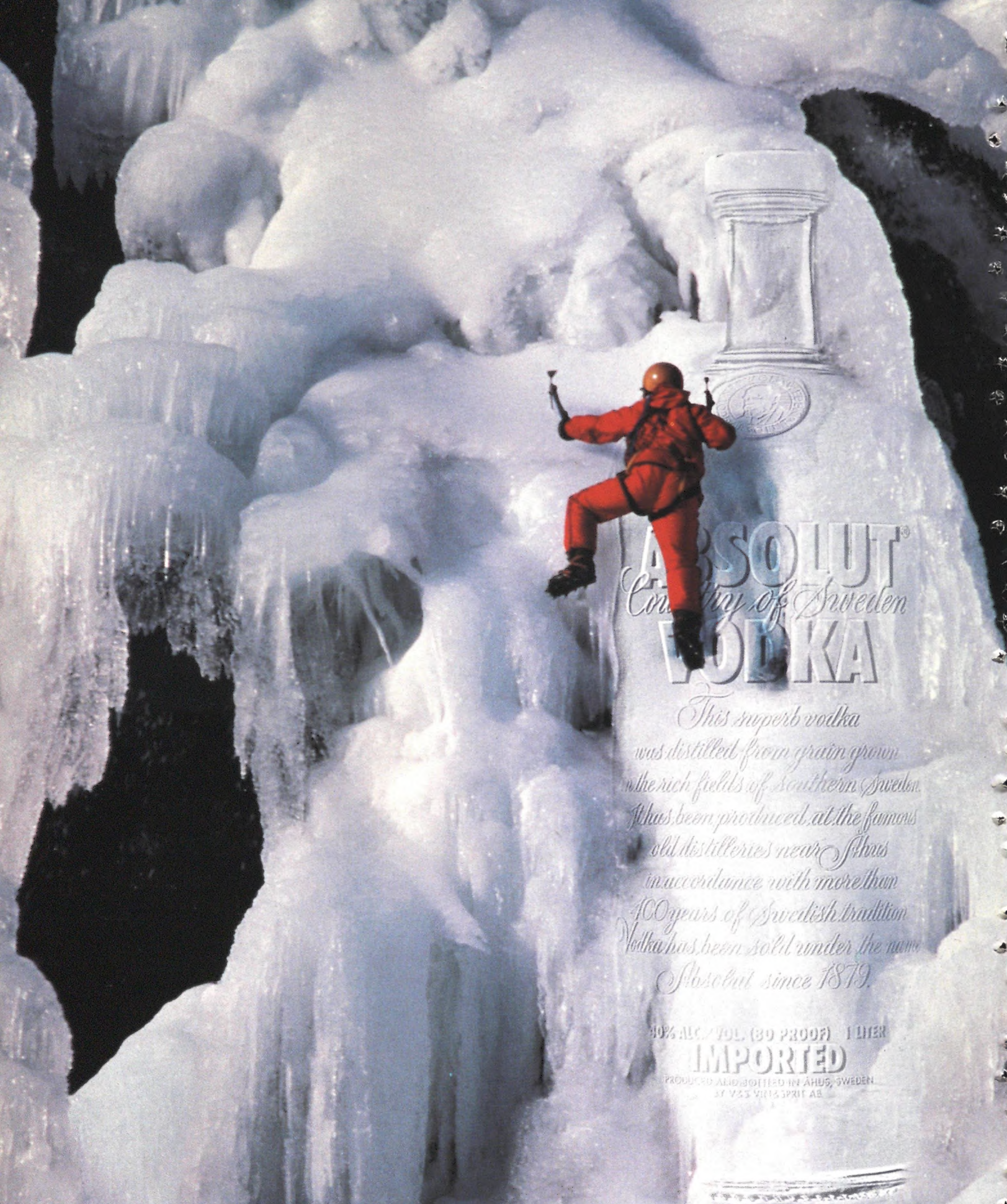
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